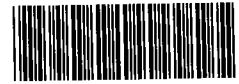


RCRA Part B Permit Renewal Application

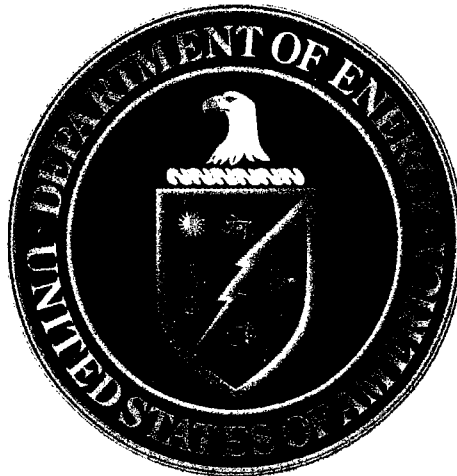
**At the Portsmouth Gaseous Diffusion Plant,
Piketon, Ohio**

**Volume 3.
Appendix D-1
Engineering Drawings**

US EPA RECORDS CENTER REGION 5



1006580



This document is approved for public release per review by:
Henry H. Thomas 07/14/2010
PORTS Classification/Information Office Date

Appendix D-1

Engineering Drawings

DX-761-997A – X-326 PLAN VIEW OF ALL PERMITTED AREAS

DX-761-2265-M – PLANS FOR A HAZARDOUS OR MIXED WASTE CONTAINER

DX-761-2286-M – PLANS FOR LARGE STORAGE CONTAINER

DX-761-2331-M-Z – PLANS FOR A 5" X 15" TIN CONTAINER

DX-761-2340-M-Z – PLANS FOR THE X-744G POLYBOTTLE

AX-761-2869-M – "CH" CONTAINER

DX-761-2586-M-Z – GP CONTAINER, 5" X 25.5" POLYETHYLENE STORAGE CONTAINER
15-999-306

AX-761-M-981-Z – STORAGE CONTAINER "F-CAN" 02-999-0302

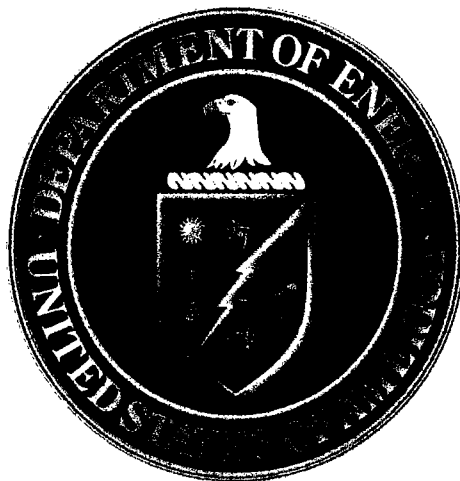
X-326-13A – X-326 ROOF PLAN – SOUTH HALF

X-326-23A – X-326 PLAN FOR WALL SECTIONS

RCRA Part B Permit Renewal Application

**At the Portsmouth Gaseous Diffusion Plant,
Piketon, Ohio**

**Volume 4.
Appendix I-1
Closure Plan for the X-326 Unit**



This document is approved for public release per review by:
Henry H. Thomas 07/14/2010
PORTS Classification/Information Office Date

SUBMISSION DATE: SEPTEMBER 13, 2010

APPENDIX I-1
CLOSURE PLAN FOR THE X-326 UNIT

SUBMISSION DATE: SEPTEMBER 13, 2010

**CLOSURE PLAN FOR THE X-326 UNIT
PORTSMOUTH GASEOUS DIFFUSION PLANT**

Date Issued — September 13, 2010

**Prepared for the
U.S. Department of Energy
Office of Environmental Restoration and Waste Management**

**LATA/Parallax Portsmouth LLC
Managing the
Environmental Remediation Activities at the
Portsmouth Gaseous Diffusion Plant
under contract DE-AC24-05OH20192
for the
U.S. DEPARTMENT OF ENERGY**

CONTENTS

APPENDICES	iii
TABLES	iv
FIGURES	iv
ACRONYMS	v
1. FACILITY DESCRIPTION	1-1
1.1 GENERAL DESCRIPTION	1-1
1.1.1 TOPOGRAPHIC MAP	1-1
1.2 HYDROGEOLOGIC INFORMATION	1-2
1.2.1 GEOLOGIC AND HYDROLOGIC SETTINGS	1-2
1.3 X-326 STORAGE UNIT DESCRIPTION	1-4
1.3.1 WASTE MANAGED	1-4
1.3.2 X-326 STORAGE UNIT DESCRIPTION	1-5
1.4 REFERENCES TO OTHER ENVIRONMENTAL PERMITS	1-5
1.5 ANTICIPATED WAIVERS OR EXEMPTIONS	1-5
1.6 CLOSURE AND POST-CLOSURE COST ESTIMATES	1-5
1.7 FINANCIAL ASSURANCE	1-5
1.8 LIABILITY COVERAGE	1-5
2. CLOSURE PROCEDURES	2-1
2.1 ESTIMATE OF THE QUANTITY OF INVENTORY TO BE REMOVED	2-1
2.2 PROCEDURES FOR HANDLING REMOVED INVENTORY	2-1
2.3 PROCEDURES FOR DECONTAMINATION AND DISPOSAL	2-1
2.3.1 SURFACE DECONTAMINATION	2-1
2.3.2 SOLID TREATMENT OR DISPOSAL	2-2
2.3.3 RINSEATE TREATMENT OR DISPOSAL	2-3
2.3.4 SOIL SAMPLING AND ANALYSIS PROGRAM	2-3
2.4 DESCRIPTION OF SECURITY SYSTEM	2-3
2.5 CLOSURE CERTIFICATION	2-3
2.5.1 ACTIVITIES TO BE CONDUCTED	2-3
2.5.2 TESTING AND ANALYSIS TO BE PERFORMED	2-4
2.5.3 CRITERIA FOR EVALUATING ADEQUACY	2-4
2.5.4 SCHEDULE OF INSPECTIONS	2-4
2.5.5 TYPES OF DOCUMENTATION	2-4
3. CLOSURE SCHEDULE	3-1
3.1 EXPECTED YEAR OF CLOSURE	3-1
3.2 FREQUENCY OF PARTIAL CLOSURE	3-1
3.3 WASTE REMOVAL	3-1
3.4 CLOSURE COMPLETION	3-1
3.5 CERTIFICATION OF CLOSURE	3-1
3.6 REQUEST FOR EXTENSION TO DEADLINES FOR HANDLING INVENTORY OR COMPLETING CLOSURE	3-1
3.7 MILESTONES	3-2

4. HEALTH AND SAFETY PLAN	4-1
4.1 OBJECTIVES	4-2
4.2 RESPONSIBILITIES	4-2
4.2.1 SITE SAFETY AND HEALTH OFFICER (SSHO)	4-2
4.2.2 PORTS ESH	4-3
4.2.3 FIELD PERSONNEL	4-3
4.3 HAZARD EVALUATION	4-3
4.3.1 RADIOLOGICAL HAZARDS	4-4
4.3.2 CHEMICAL HAZARDS	4-4
4.3.3 PHYSICAL HAZARDS	4-4
4.3.3.1 HEAVY EQUIPMENT	4-5
4.3.3.2 TRENCHING	4-5
4.3.3.3 ELECTRICAL	4-5
4.3.3.4 TRIPPING AND FALLING	4-6
4.3.3.5 UTILITIES AND POWERLINES	4-6
4.3.3.6 NOISE	4-6
4.3.3.7 HEAT STRESS	4-6
4.3.3.8 COLD STRESS	4-8
4.3.3.9 ILLUMINATION	4-9
4.3.3.10 SANITATION	4-9
4.3.3.11 BODIES OF WATER	4-9
4.3.3.12 CONFINED SPACE ENTRY	4-9
4.3.3.13 SITE HOUSEKEEPING	4-9
4.4 AIR MONITORING	4-11
4.4.1 RADIOACTIVE MATERIALS	4-11
4.4.2 CHEMICAL HAZARDS	4-11
4.4.3 PHYSICAL HAZARDS	4-12
4.4.4 EQUIPMENT CALIBRATION AND MAINTENANCE	4-12
4.5 PERSONAL PROTECTIVE EQUIPMENT	4-12
4.5.1 RESPIRATORY PROTECTION	4-13
4.5.2 PROTECTIVE CLOTHING	4-14
4.6 SITE CONTROL	4-15
4.6.1 EXCLUSION ZONE	4-15
4.6.2 DECONTAMINATION ZONE	4-15
4.6.3 SUPPORT ZONE	4-16
4.7 GENERAL WORK PRACTICES	4-16
4.8 TRAINING AND INFORMATION PROGRAMS	4-17
4.9 MEDICAL SURVEILLANCE	4-19
4.10 HAZARDOUS WASTE SITE EMERGENCY PROCEDURES	4-19
4.10.1 INJURY IN EXCLUSION OR DECONTAMINATION ZONE	4-19
4.10.2 INJURY IN THE SUPPORT ZONE	4-19
4.10.3 FIRE/EXPLOSION	4-20
4.10.4 PROTECTIVE EQUIPMENT FAILURE	4-20
4.11 PORTS EMERGENCY PROCEDURES	4-20
4.11.1 REPORTING AN EMERGENCY	4-20
4.11.2 RECOGNIZING EMERGENCY ALARMS	4-21
4.11.3 MONITORING STATION LOCATIONS	4-21
4.12 RECORDS AND REPORTING REQUIREMENTS	4-21
4.13 COMPLAINTS	4-23

SUBMISSION DATE: SEPTEMBER 13, 2010

APPENDICES

- A STRATIGRAPHIC AND CONSTRUCTION LOGS OF WELLS AND SOIL BORINGS IN THE VICINITY OF THE X-326 STORAGE UNIT
- B X-326 FACILITY CLOSURE PLAN STANDARD OPERATING PROCEDURES

TABLES

1. X-326 CONTAINMENT CAPACITY CALCULATIONS
2. MAXIMUM NUMBER OF CONTAINERS, X-326 UNIT
3. X-326 SAMPLING PARAMETER LIST
4. IMPLEMENTATION SCHEDULE FOR CLOSURE OF THE X-326 STORAGE UNIT

FIGURES

1. LOCATION OF THE PORTSMOUTH GASEOUS DIFFUSION PLANT
2. LOCATION OF X-326 AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT
3. TOPOGRAPHIC DETAILS OF THE X-326 FACILITY
4. REGIONAL STRUCTURAL CROSS SECTION THROUGH PORTS
5. EXISTING WELLS NEAR THE X-326 FACILITY

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ALARA	As low as reasonably achievable
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
COC	Chain-of-Custody
CPR	Cardiovascular Pulmonary Resuscitation
DAC	Derived Air Concentration
DBA	Decibel
dm	Decimeter
DOCC	Description of Current Conditions
DOE	United States Department of Energy
DOT	United States Department of Transportation
dpm	Disintegrations per minute
EPA	United States Environmental Protection Agency
ESH	Environmental, Safety and Health
HASP	Health and Safety Plan
HWP	Hazardous Work Permit
ID	Identification
IDLH	Immediately Dangerous to Life and Health
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MPH	Miles per hour
Mrem/hr	Millirem/hour
MSDS	Materials Safety Data Sheet
MSHA	Mine Safety and Health Administration
NEPA	National Environmental Policy Act
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PAL	Plant Allowable Limit
PCB	Polychlorinated biphenyl
PED	Plant Emergency Director
PELs	Permissible Exposure Limits
PID	Photo-ionization detector
PORTS	Portsmouth Gaseous Diffusion Plant
PPE	Personal Protective Equipment
ppm	Parts per million
PVC	Polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
QAS	Quality Assurance Standard
RCRA	Resource Conservation and Recovery Act
rem	Units of radiation

SUBMISSION DATE: SEPTEMBER 13, 2010

RFD	Request For Disposal
RFI	RCRA Facility Investigation
SCBA	Self Contained Breathing Apparatus
SOPs	Standard Operating Procedures
SSHO	Site Safety and Health Officer
SW-846	Publication of the U.S. EPA – Solid Waste Office
SWMU	Solid Waste Management Unit
TAL	Inorganic Compound List
TCL	Target Compound List
TLVs	Threshold Limit Values
TSCA	Toxic Substances Control Act
uCi/mL	Micro-Curie per milliliter
U.S. EPA	United States Environmental Protection Agency
UL	Underwriters' Laboratory
USCG	United States Coast Guard
U.S. GPO	United States Government Pricing Office
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
°F	Degrees Fahrenheit
“	inch
‘	foot

1. FACILITY DESCRIPTION

1.1 GENERAL DESCRIPTION

The Portsmouth Gaseous Diffusion Plant (PORTS) is owned by United States Department of Energy (DOE) and is contractor managed by LATA/Parallax Portsmouth LLC. For the purposes of this permit application, DOE and LATA/Parallax Portsmouth, LLC are Co-Operators of the X-326 Hazardous Waste Storage Units.

PORTS is located at 39°00'30" N latitude and 83°00'28" W longitude on a federally owned reservation in Pike County, Ohio. Pike County, one of the state's lesser populated counties, encompasses an area of approximately 444 square miles. The site is located approximately equidistant between Chillicothe and Portsmouth, Ohio. The plant site is approximately 4 miles southeast of Piketon, Ohio, 1.5 miles east of U.S. Route 23, 2 miles east of the Scioto River, and 70 miles south of Columbus, Ohio (see Figure 1).

PORTS has operated since 1954, enriching uranium for national defense and commercial nuclear reactors. That enrichment was accomplished by the gaseous diffusion process. As of 1993, all uranium enrichment operations at PORTS are conducted by the United States Enrichment Corporation (USEC), formed as a government-owned corporation by the Energy Policy Act of 1992 that became private in July 1998. As such, DOE's mission at the PORTS site has changed to environmental restoration, waste management, removal of highly enriched uranium, decontamination and demolition activities, and operation of nonleased facilities.

As a result of historical enrichment operations, which is typical of large industrial plants, a wide variety of hazardous wastes are generated. These include analytical laboratory wastes, spent solvents, electroplating wastes, paint wastes, sludges, corrosive wastes, and environmental restoration generated wastes.

The X-326 Storage Unit is located in the central part of the PORTS site (see Figure 2). The X-326 Building was in use from 1956 through 2001 for the enrichment of uranium hexafluoride. The structure is 2,230 feet long, 552 feet wide, and 62 feet high. It contains 58 acres of floor space. The X-326 Building is totally enclosed with a built-up roof, transite walls, and concrete floors. There are seven areas of the building, totaling approximately 38,105 square feet, designated for the storage of hazardous wastes. The storage areas are located on the first floor towards the south end of the building (see Figure 3).

The X-326 Storage Unit is intended for the storage of high assay uranium bearing hazardous wastes until further uranium classification, or off-site shipment for recovery, treatment, or disposal is completed. Waste types to be stored in the X-326 hazardous waste storage areas may include any or all of the waste codes specified in the Part A Permit Application.

Seven areas have been delineated for the storage of hazardous wastes in the X-326 building. These are Areas 1, 2, 3, 4, 5, 6 and the "L" Cage (the "L" Cage consists of both the East Cage and the West Cage). Storage area floors are primed and finished with a urethane-based sealant. All storage areas are surrounded by a 1" x 1" x 1/8" angle iron dike set in a chemically resistant elastomeric sealant. The floors are six to nine inches thick and constructed of concrete.

1.1.1 TOPOGRAPHIC MAP

The U.S. Geological Survey (USGS) topographic map for the facility is shown in Section B, Figure B-2. Topographic details of the X-326 Storage Unit area are shown on Figure 3.

1.2 HYDROGEOLOGIC INFORMATION

1.2.1 GEOLOGIC AND HYDROLOGIC SETTINGS

The PORTS facility lies near the western margin of the Appalachian Highlands within the Appalachian Plateau Province. The physiography of this area is typified by rugged, irregularly dissected hills and ridges separated by generally mature drainage systems. The topographic highs are erosional remnants of the more competent units of the Paleozoic bedrock which underlie the area.

The facility lies to the south of the terminus of Pleistocene glaciation, however, two distinct physiographic features of glacial origin are present in the area. The most prominent of these features are large flat expanses of glacio-lacustrine deposits which fill preglacial topographic depressions. Deeply incised stream valleys which formed during periods of high flow resulting from glacial meltwater are also present locally.

Most of these valleys are partially filled with alluvial material and many are occupied by streams which are orders of magnitude smaller than the ones which originally formed the valleys.

The PORTS facility is situated on one of the glacio-lacustrine deposits formed when drainage of the preglacial Teays River was obstructed and prehistoric Lake Tight was impounded. Lake Tight occupied both the main Teays River valley and many of its tributary valleys, including the Portsmouth and Newark River valleys. Fine-grained sediments accumulated within Lake Tight, forming lacustrine deposits of silt and clay as much as 50 feet thick. Figure 4 exhibits regional stratigraphic information at the PORTS facility.

Bedrock in the area consists of sedimentary strata of marine origin which were deposited during the Paleozoic Era. The formations which comprise the bedrock beneath the PORTS facility belong to the Waverly Group, and they are described below.

The Cuyahoga Formation is comprised of sandstone, conglomerate, and shale. Locally the Cuyahoga is predominantly composed of gray shale, and it is present on both the east and west side of the facility where it outcrops on the hills. The Cuyahoga formation is 250 to 300 feet thick.

The Sunbury shale is described as a hard, "bony", fissile shale. It is typically highly carbonaceous and black in color. The unit averages 20 feet in thickness throughout its known range, and it has been reported to have a maximum thickness of about 30 feet. However, the formation is highly variable, and in the vicinity of the PORTS facility the Sunbury averages only 8 to 10 feet in thickness. The Sunbury may have been removed from some areas due to erosion either before the deposition of the Lake Tight sediments (Teays formation) or in relatively recent times.

The Berea sandstone is comprised of a fine-grained sandstone interspersed with thin shale beds and laminae. The unit is gray to brown in color and 25 to 40 feet thick in the subject area. The sandstone beds range in thickness from 6 inches to 2 feet and are described as weather resistant, with "regular jointing" at right angles to bedding surfaces. In Pike County the uppermost 6 to 10 feet of the unit is reported to be massive with few bedding planes or shale laminae. Below this upper unit a 20 to 35 foot thick blue and gray sandstone interbedded with shale is present. This unit is reported to increase in shale content downsection so that it exhibits a gradational contact with the underlying Bedford shale.

SUBMISSION DATE: SEPTEMBER 13, 2010

The Bedford shale is a thinly bedded, calcareous shale interfingered with thin, fine-grained argillaceous sandstones. The unit ranges from 90 to 100 feet in thickness and has a bluegray to red colored, clay-like shale comprising the upper zone. The lower portion of the unit is similar physically to the upper zone but is red in color.

The Paleozoic strata are inclined (dip) very slightly to the east, so that subsequent erosion, before the formation of Lake Tight, exposed the Sunbury shale in the eastern part of the area and the underlying Berea sandstone to the west. These formations thus comprise the bedrock in their former outcrop areas, now buried beneath the sediments of Lake Tight.

An assemblage of unconsolidated sediments, the Teays formation, covers the bedrock over much of the area of the PORTS facility. The Teays is comprised mainly of two members: the Gallia sand and the Minford clay. The Gallia sand is the basal unit, consisting largely of sand and gravel deposits of fluvial origin. Muscovite and feldspar are present as accessory minerals, and local bedrock fragments are common to the base of the unit in some areas. The Gallia is normally 5 to 10 feet in thickness, and it interfaces sharply with underlying bedrock. The Minford clay, overlying the Gallia member, consists of up to 40 feet of mostly lacustrine silty clay. The Teays formation represents the glacio-lacustrine sedimentary environment of the prehistoric Lake Tight. The thickness of the Teays formation is controlled by the topography of the erosional surface of the bedrock; it is thickest in low areas on the bedrock surface and may be absent on bedrock highs.

Two types of aquifers with differing hydrogeologic characteristics exist in the area of the facility: a bedrock aquifer and a complex alluvial aquifer. These water-bearing systems generally behave as two distinct and hydraulically separate aquifers; however, at some locations within the PORTS facility the two systems have been demonstrated to be interconnected.

The uppermost aquifer system in the area is the Teays formation which consists of unconsolidated Pleistocene valley fill comprised variously of clay, sand, silt, and gravel of both fluvial and lacustrine origins. This unit ranges in thickness from 0 to 50 feet primarily as a result of the underlying erosion surface. The aquifer system on the Piketon Reservation becomes more complex within the Big Run and Little Beaver Creek channels. These units are thin fluvial deposits, typically being only a few feet in thickness.

The alluvial aquifers are generally comprised of two separate units: a basal sand and gravel, and an overlying finer grained lacustrine deposit. The basal unit is the Gallia sand member. The Gallia sand grades upward from a coarse sand or gravel to a fine sand, and is composed primarily of subangular to subrounded quartz. The Minford clay (or Minford silt) member overlies the Gallia sand and consists of silt and laminated clays. This unit is generally 15 to 25 feet thick at the site but reportedly exhibits a maximum thickness of 80 feet in nearby locations.

Permeability in these alluvial aquifers is primarily a function of the intergranular pore space, and consequently it varies according to the nature of the sediments. The hydraulic conductivities of the various materials present ranges from 2×10^{-7} cm/sec for the lacustrine silts and clays to as high as 1×10^{-3} cm/sec for the sand and gravel.

The bedrock aquifer includes both sandstones and shales. Permeability in both rock types is mainly attributed to secondary porosity, resulting from fractures and fissures. No significant differences appear to exist in the permeabilities of the different rock types near the surface of the bedrock, which are probably controlled by fractures. However, as the degree of weathering decreases and overburden pressure increases with depth, the aperture of the fractures that compose the secondary porosity system may decrease. Therefore, the components of the primary porosity system, grain size, grain shape and packing arrangement, may exert a greater influence over hydraulic conductivity as the distance from the surface of the bedrock becomes greater. Packer tests indicate that the Berea sandstone is more permeable than the Bedford shale. The Bedford shale

SUBMISSION DATE: SEPTEMBER 13, 2010

has an average hydraulic conductivity of 2.66×10^{-5} cm/sec in the vicinity of the site. Hydraulic conductivities on the order of 10^{-4} cm/sec have been reported for the Berea sandstone in this area.

The Sunbury shale is present beneath the X-326 building along the eastern margin of Quadrant III. However, to the west of the building the Sunbury is not present. Beneath the Gallia, the Sunbury shale where present, acts as a barrier to the vertical flow of groundwater thereby inhibiting the contamination of the Berea. The lower vertical boundary is the Bedford shale which lies beneath the Berea. The unit is composed primarily of shale and also limits the downward flow of groundwater. This is true for all quadrants.

Near the X-326 facility the Minford clay is approximately 12 to 32 feet thick and the Minford Silt is approximately 10 to 16 feet thick. The Gallia formation is estimated to be approximately 3 to 7 feet thick. Stratigraphic and construction logs of the wells are included in Appendix A.

1.3 X-326 STORAGE UNIT DESCRIPTION

1.3.1 WASTE MANAGED

The X-326 Storage Unit was designed and intended for the storage of hazardous waste. The wastes that may be stored in the X-326 Storage Unit include aqueous laboratory solutions, spent laboratory solvents, and decontaminated solutions from several other buildings on the plant site.

Wastes stored in the X-326 Storage Unit may include but not limited to:

- D001 Ignitables
- D002 Corrosive (acid and alkaline)
- D004-D043 TC Characteristic
- F001
- F002
- F003
- F005
- Radioactive RCRA Wastes
- TSCA/RCRA Mixed Wastes
- Radioactive TSCA/RCRA Mixed Wastes

The wastes are stored in approved 5, 20, 30, 55 or 85 gallon containers, 5-inch cans or 10-liter polyethylene bottles, or other approved containers in accordance with section D of the part B permit. The drums are raised off the floor via pallets, steel, supports, etc., and the bottles are placed into support sleeves which are raised above the floor to prevent contact with potentially inadvertent standing liquid introduced into the area.

1.3.2 X-326 STORAGE UNIT DESCRIPTION

The X-326 Storage Unit is located in the south end on the first floor of the X-326 process building. Section D, Figure D-1 and Appendix D-1, drawing DX-761-997A contain the floor plan for the X-326 Storage Unit. The X-326 building is totally enclosed with a built-up roof, transite walls and concrete floors.

Heating and cooling is provided as needed in the RCRA-permitted storage areas. The area around the building is sloped to direct run-on and run-off water to the PORTS storm sewer system.

Approximately 38,105 square feet of the X-326 is designated as storage space and will be used as required until final closure is initiated. The storage area dimensions and containment capacity for the seven areas within the X-326 Storage Unit are delineated in Table 1.

Seven areas in the X-326 building are delineated for storage: areas 1, 2, 3, 4, 5, 6 and the "L" Cage (the "L" Cage consists of both the East Cage and the West Cage). Storage area floors for 1, 2, 3, 4, 5 and 6, are sealed, primed and finished with a urethane-based sealant. The "L" Cage area has had any existing concrete cracks (these were hairline cracks in the surface of the concrete and not significant structural faults) sealed with a polyurethane caulking sealant and recoated with one coat of chemically-resistant urethane sealant. All storage areas are surrounded by a 1" x 1" x 1/8" angle iron dike set in a chemically resistant elastomeric sealant. The floors are six to nine inches thick and constructed out of concrete (Appendix D-1 provides a general cross-section of the X-326 building).

1.4 REFERENCES TO OTHER ENVIRONMENTAL PERMITS

The PORTS facility operates in conformance with requirements established by a number of federal and state statutes and regulations, Ohio EPA Directors Final Findings and Orders, Executive Orders, DOE Orders, permits and/or submitted applications criteria, and compliance and settlements agreements. The PORTS facility maintains compliance status with regard to major environmental statutes under the following: Ohio EPA air permits and registered air emission sources; National Pollutant Discharge Elimination System (NPDES) permit OIO00000; a Part B Permit; TSCA regulated storage areas; and Ohio State Fire Marshal Underground Storage Unit (UST) Registrations.

1.5 ANTICIPATED WAIVERS OR EXEMPTIONS

No waivers or exemptions are anticipated to be requested or required for the closure of this facility. The PORTS facility, including the X-326 Storage Unit, is owned by the U.S. Department of Energy, a Federal Agency.

1.6 CLOSURE AND POST-CLOSURE COST ESTIMATES

In accordance with Ohio Administrative Code (OAC) 3745-55-40(C), closure and post-closure cost estimates are not required for this Federal Facility.

1.7 FINANCIAL ASSURANCE

In accordance with OAC 3745-55-40(C), financial assurance is not required for this Federal Facility.

1.8 LIABILITY COVERAGE

In accordance with OAC 3745-55-40(C), liability coverages are not required for this Federal Facility.

2. CLOSURE PROCEDURES

The closure described in this plan is intended to minimize the need for further maintenance. It eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off or hazardous waste decomposition products to the ground or surface waters or to the atmosphere. Closure will be accomplished by the removal of waste and decontamination of the X-326 Storage Unit floors, diking and associated surfaces.

2.1 ESTIMATE OF THE QUANTITY OF INVENTORY TO BE REMOVED

The maximum capacity of the X-326 Storage Unit is delineated in Table 2. Wastes stored in the X-326 Storage Unit are discussed in Section 1.3.1.

2.2 PROCEDURES FOR HANDLING REMOVED INVENTORY

All wastes removed from the facility will be stored on-site at the X-326 and shipped off-site for treatment and/or disposal. All wastes will be disposed in strict compliance with all applicable environmental regulations. Any wastes removed from the facility for disposal will be removed in an acceptable manner to transportation vehicles appropriate for waste transport. All transportation will take place via hazardous waste transporters registered with the Public Utilities Commission of Ohio and U.S. EPA and possessing a registration number from each of these entities. All waste disposed will be manifested using the uniform hazardous waste manifest (U.S. EPA form 8700-22 and 8700-22A) in accordance with Ohio Administrative Code 3745-52-20 before transportation off-site.

2.3 PROCEDURES FOR DECONTAMINATION AND DISPOSAL

2.3.1 SURFACE DECONTAMINATION

The X-326 Storage Unit storage area surfaces consist of urethane painted/coated concrete surfaces and associated 1" x 1" x 1/8" angle iron diking. The urethane material is extremely resistant to chipping and cracking. Structural joints are filled with a caulking which is also extremely resistant to cracking.

Each of the seven storage areas of the X-326 Storage Unit will be decontaminated as discussed herein. Prior to decontamination of a storage area, the area will be divided into zones for decontamination verification. Before decontamination procedures begin, a certified professional engineer will determine the perimeter of the zones based upon visual inspection. Areas of apparent surface staining, contamination or structural faults will be noted for special evaluation in zone and/or sampling consideration. The inner and outer surfaces of the 1" diked outer periphery of the storage areas will be decontaminated.

Decontamination zones will be limited in size in these areas to accommodate the decontamination technique utilized. Washwater in these areas will be immediately collected to ensure it does not migrate from areas being decontaminated. Sorbent material will also be placed on the floor approximately 1 foot from the outer edge of the 1" dike and utilized as diking to eliminate wastewater migration. Any floor drains in these areas will be temporarily sealed to prevent migration. To decontaminate the X-326 Storage Unit, personnel will use a brush, mops, and/or a high pressure hot water spray to wash down the floor. All decontamination procedures will strictly adhere to the health and safety requirements outlined in the X-326 Storage Unit HASP

SUBMISSION DATE: SEPTEMBER 13, 2010

(Health and Safety Plan) (Section 4.). Minimal detergent solutions will be used to facilitate the proposed treatment of any generated liquid waste. As the floor is cleaned, the liquid spray will be collected and placed into containers. The areas where the contaminated material and liquid wastes are transferred to containers will be curbed and overlain with Visqueen or equivalent plastic sheeting to provide spill containment.

Chemical analysis of the final rinseate will be used to determine if sufficient decontamination of the surfaces has taken place. One sample of rinseate will be collected from each of the decontamination zones delineated by the professional engineer. Each sample will be analyzed for the parameters listed in Table 3. The X-326 Storage Unit surfaces will be considered clean when concentrations of liquid hazardous waste or hazardous waste constituents are measured below the maximum contaminant levels for drinking water standards. If there are no maximum contaminant levels for the constituents then maximum contaminant level goals will be the standard.

If the analysis indicates contamination exists on the floor, the decontamination procedure will be repeated. If analysis indicates contamination still exists, the contaminated floor areas may be decontaminated by scabbling or a similar procedure to remove the contamination. The decontamination standard for scabbling or a similar procedure is as follows: removal of at least 0.6 centimeters of the surface layer of porous materials (e.g., concrete, asphalt pavement, etc.), and treatment to a "clean debris surface" pursuant to 40 CFR 268.45, Table 1 or OAC Rule 3745-270-45, Table 1. Achievement of the 0.6 centimeter standard should be verified by reference to machinery design specifications and level of effort. If scabbling or a similar procedure is necessary, steps to minimize or eliminate fugitive dust air emissions will be taken. Debris removed will be placed into containers and disposed as discussed in Section 2.3.2. If unexpected contamination is found or contamination is identified beneath the depth of the slab, DOE will immediately contact Ohio EPA to discuss alternatives and amendment of the closure plan.

A maximum volume of 5,000 gallons of rinseate/wastewater is estimated to be generated by the above processes.

All workers involved in decontamination of the X-326 Storage Unit surfaces will comply with the health and safety procedures outlined in the X-326 Storage Unit Closure HASP contained in Section 4.

2.3.2 SOLID TREATMENT OR DISPOSAL

At completion of closure for the X-326 Storage Unit, all non-disposable equipment including power tools, hand tools, hoses and other miscellaneous equipment will be decontaminated in a previously constructed decontamination area that is curbed and overlain with Visqueen or equivalent plastic sheeting to provide containment following the procedures outlined in Appendix B.

Disposable equipment and supplies generated during the X-326 Storage Unit closure will not be decontaminated but will be placed into 55-gallon United States Department of Transportation (DOT) 17C open top drums or other structurally competent DOT approved compatible containers on a daily basis. At project completion, all containers with disposable equipment/supplies will be disposed at an off-site facility in accordance with all applicable disposal regulations (e.g., RCRA, TSCA, NRC) or stored on-site pending disposal. Any additional solids removed such as concrete, paint chips, sealant pieces will be subjected to laboratory waste characterization and disposal as hazardous waste or as low-level radioactive waste, depending on the radioactivity of the material. It is estimated a total of 2,000 pounds of wastes will be generated in the above process.

2.3.3 RINSEATE TREATMENT OR DISPOSAL

All liquid wastes generated during the X-326 Storage Unit closure will be managed initially as hazardous waste. Each drum of rinseate/wastewater generated during decontamination will be tested for parameters listed in Table 3 to document the extent of contamination and insure levels are acceptable for treatment described herein. Rinseates will then be managed as a wastewater and treated through one of the facility's NPDES permitted treatment systems. Rinseate will be managed in strict compliance with the Clean Water Act. It is estimated a maximum of 5,000 gallons of liquid waste will be treated in this manner.

Rinseate may also be managed as a radioactive waste and not discharged to an NPDES treatment system depending on the radioactivity, if any, of the rinseate.

2.3.4 SOIL SAMPLING AND ANALYSIS PROGRAM

Because the X-326 Storage Unit storage floor surface areas consist of a layer of concrete six to nine inches thick, it is extremely unlikely that a crack could develop that would allow migration of wastes to soils below. Therefore, no soil sampling will be conducted as part of this closure. If structural cracks are discovered, PORTS will immediately contact the Ohio EPA to discuss amending the closure plan.

2.4 DESCRIPTION OF SECURITY SYSTEM

PORTS is a controlled access facility with fencing, gates, and numerous other features that contribute to the safety and security of the facility. Security is maintained by a staff of trained security guards 24-hours a day. Routine patrols of areas outside the main complex are conducted at a minimum of once every eight hours. All security guards are equipped with two way radios and have direct communication with other protection personnel (i.e. fire department, shift superintendents, and the plant communications center). Employees are required to show identification badges when entering all main complex gates. Visitors and contractors entering the main complex must sign a log sheet and/or obtain proper passes.

2.5 CLOSURE CERTIFICATION

Within sixty (60) days of final closure, the owner/operator and an Independent Certified Professional Engineer will submit a certification of closure to the Ohio EPA Director by registered mail, assuring that the closure has been performed and is in accordance with the approved closure plan.

2.5.1 ACTIVITIES TO BE CONDUCTED

The performance standards to be used in evaluating activities proposed in Section 2.2 and 2.3 are the detection limits of the individual hazardous chemicals. Samples will be collected from decontamination rinseate and laboratory testing will use equipment capable of obtaining the lowest detection limits possible.

SUBMISSION DATE: SEPTEMBER 13, 2010

2.5.2 TESTING AND ANALYSIS TO BE PERFORMED

The sampling and analysis protocol for activities proposed in Section 2.2 and 2.3 will generally follow the requirements of SW-846 and the SOPs in Appendix B. All laboratory sample analytical methods will follow a specific quality assurance and quality control plan.

2.5.3 CRITERIA FOR EVALUATING ADEQUACY

The activities proposed in Section 2.2 and 2.3 will be evaluated by an Independent Certified Professional Engineer. The Independent Certified Professional Engineer will be required to submit a report of findings and recommendations.

2.5.4 SCHEDULE OF INSPECTIONS

The areas where the activities proposed in Section 2.2 and 2.3 are to be conducted will be inspected by the independent engineer routinely. Upon the beginning of closure operations, the independent engineer will notify the Ohio EPA (District and Central Office) five days prior to any critical activity and will inspect all closure activities on a daily basis. All observation and inspection activities will be recorded in the engineer's

log book. This schedule will continue until the activity has been completed, all hazardous waste has been removed, any contaminated soil or rinsewaters have been removed, and the sampling protocol has been completed. In addition to the closure performance inspection, PORTS health and safety, and building custodian personnel will be inspecting the X-326 Storage Unit closure area.

2.5.5 TYPES OF DOCUMENTATION

Documentation which will be included in the closure certification report will include the sample analysis information, volume of waste generated during closure, waste records, spill/leak reports, all sample and decontamination procedures documentation (Chain-of-Custody (COCs), sampling logs, etc.), routine and special inspection records, photography, the approved closure plan and other related documents. In addition, the closure certifications report will contain any correspondence with outside agencies and independent evaluations which relate to the closure activity.

3. CLOSURE SCHEDULE

3.1 EXPECTED YEAR OF CLOSURE

The X-326 Storage Unit is expected to undergo closure upon filing a notification of intent to close to Ohio EPA 60 days prior to beginning closure in the year 2041 (or earlier based on Decontamination and Decommissioning of the X-326) and will follow the schedule outlined in Table 4.

3.2 FREQUENCY OF PARTIAL CLOSURE

Partial closure of any one or more of the seven storage areas within the X-326 Storage Unit may occur prior to the expected year of closure.

3.3 WASTE REMOVAL

The X-326 stored hazardous waste will be shipped to a permitted treatment, storage, or disposal facility. Any remaining waste at the time of closure will be removed accordingly. The schedule for waste removal is illustrated in Table 4.

3.4 CLOSURE COMPLETION

Closure is expected to be completed within 180 days of beginning closure under an Ohio EPA approved plan. Closure will be accomplished immediately following confirmatory sampling displaying no contamination is present from the storage area. Although no time extension requests are anticipated, if one should become necessary, it will be requested in accordance with demonstration requirements specified in OAC 3745-55-13.

3.5 CERTIFICATION OF CLOSURE

Within 60 days of successful completion of the prescribed closure, the Department of Energy will submit to the Director of the Ohio EPA, by registered mail, a certification that the X-326 unit has been closed in accordance with the specifications in the approved closure plan. In addition, the Regional Administrator, U.S. EPA Region V will be sent a copy. The certification statement will include the exact wording found in OAC 3745-50-42(D). The certification will be signed by the owner and by the Independent Certified Professional Engineer responsible for closure oversight, registered in the State of Ohio.

3.6 REQUEST FOR EXTENSION TO DEADLINES FOR HANDLING INVENTORY OR COMPLETING CLOSURE

There are no extensions needed at this time.

SUBMISSION DATE: SEPTEMBER 13, 2010

3.7 MILESTONES

Table 4 exhibits the time required for each phase of the X-326 Storage Unit closure.

4. HEALTH AND SAFETY PLAN

A general Health and Safety Plan (HASP) has been developed for closure of the X-326 Storage Unit at PORTS. The HASP presents the procedures to be followed which will achieve compliance with applicable federal, state and local regulations.

Prior to commencement of any closure field activities, a detailed and site specific HASP will be required to be submitted by the contractor selected to perform these closure activities. The site specific HASP will include, but is not limited to, the following general requirements.

- DOE Orders (e.g., 5480.4, 5480.10 and 5480.11)
- Code of Federal Regulations (e.g., OSHA 29 CFR, EPA 40 CFR, and DOT 49 CFR)
- American Conference of Governmental Industrial Hygienists(ACGIH) threshold limit values (TLVs), latest edition
- Standard practice procedures for health and safety

This HASP will be available at PORTS for inspection by employees, their designated representatives, DOE, EPA and other authorized personnel. Specific safety and health hazards of each phase of site investigation operations and the requirements and procedures for employee protection will be provided in the site safety and health plan. The site safety and health plan complies with 29 CFR 1910.120 and must be developed and approved prior to hazardous waste operations. As a minimum, the site safety and health plan addresses the following items:

- Names of key personnel and alternates responsible for site safety and health and appointment of a site safety and health officer;
- Site characterization and analysis;
- A safety and health risk analysis of each site task and operation;
- Employee training;
- Selected engineering controls, administrative controls and work practices to be implemented;
- Personal protective equipment to be used by employees for each of the site tasks and operations being conducted;
- Medical surveillance requirements;
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used. Methods of maintenance and calibration of monitoring and sampling equipment used;
- Site control measures;
- Decontamination procedures;
- Site's standard operating procedures;

SUBMISSION DATE: SEPTEMBER 13, 2010

- A contingency plan meeting the requirements of paragraph (1) of 29 CFR 1910.120 for safe and effective responses to emergencies including the necessary personal protective equipment and other equipment; and
- Confined space entry procedures.

4.1 OBJECTIVES

This general HASP contains the requirements for protection of on-site personnel and the public during closure of the X-326 Storage Unit at PORTS.

The protection of individuals and the environment are major concerns during any project involving potentially hazardous substances. The objective of this HASP is to assure that safe working conditions exist at the site during the field activities. Adopted safety measures and procedures have been based on an analysis of potential hazards at PORTS.

This HASP has been developed based upon a review of the requirements and guidelines described in the EPA Standard Operating Safety Guide, U.S. Department of Labor OSHA Standards 29 CFR Part 1910 (especially, 29 CFR 1910.120 covering hazardous waste operations), NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (U.S. Department of Health and Human Services Publication No. 85-115). Subcontractors will be given copies of this general HASP and will be required to follow the procedures and protocols specified herein for development and implementation of specific site safety and health plans.

Requirements of this general HASP and associated site safety and health plans may be modified, in writing, in response to review of changing site conditions upon approval by PORTS Environmental, Safety and Health (ESH) and the Site Safety and Health Officer.

4.2 RESPONSIBILITIES

All closure operations which might expose personnel to site contamination are subject to this HASP. Avoiding adverse health effects and injuries to the site workers and preventing environmental insult are dependent on the contribution of all project participants.

4.2.1 SITE SAFETY AND HEALTH OFFICER (SSHO)

The Site Safety and Health Officer (SSHO) will be responsible for providing technical coordination of the health and safety program. The officer will review documentation on medical programs and training requirements to be certain that personnel fulfill OSHA requirements. After review of the site safety and health plan's hazard assessment, the health and safety officer will select appropriate air monitoring engineering controls, work practices and personal protective equipment for particular work areas. Daily activities and site access are monitored to assure that all applicable procedures are followed. Representatives of PORTS ESH and the EPA will oversee issues relating to health and safety. The officer provides authorized personnel with the HASP-related documentation which must be available at PORTS. This documentation includes the following:

- A copy of the physician's written opinion for each employee;
- A copy of training records, which document that each employee has completed the necessary training to accomplish the job to satisfy applicable 29 CFR and 40 CFR requirements, and is trained in the use of respiratory protection equipment;
- Documentation of the fit-testing program for respiratory protection equipment (meeting the requirements of OSHA 1910.134 and the American National Standards Institute (ANSI) Z88.2-1980);
- Job-specific (e.g., drilling, drumming waste, etc.) air monitoring records;
- A copy of this HASP and appropriate site safety and health plans; and
- Assurance that operators possess current licenses/certificates to operate motorized equipment.

The SSHO will communicate the specified safety-related requirements to all personnel during the daily safety meeting. Pre-entry briefings are held prior to initiating any site activity and at other times as necessary to ensure that employees are informed of and follow the site safety and health plan.

4.2.2 PORTS ESH

PORTS ESH is ultimately responsible for ensuring that all project participants abide by the requirements set forth in this plan. Approval of each site safety and health plan must be granted by PORTS ESH prior to initiating site operations. No individual may enter a hazardous waste site unless authorized by PORTS ESH to have site access. Such access is dependent upon presentation of satisfactory documentation including a physician's written opinion and necessary training.

PORTS ESH performs periodic audits to assure field implementation of the general HASP and site safety and health plans and reviews air and personal exposure monitoring results.

Disputes over health and safety issues will be resolved by PORTS ESH and the SSHO prior to submitting a modified HASP to Ohio EPA and U.S. EPA for review. The Ohio EPA and U.S. EPA shall also be kept informed of all changes made to the HASP.

4.2.3 FIELD PERSONNEL

Field personnel must be properly trained in health and safety regulations associated with handling hazardous materials and are responsible for adherence to the safety procedures during performance of the work. In no case may work be performed in a manner that conflicts either with the intent of these procedures or with the inherent safety and environmental cautions expressed. After due warnings, any personnel who violate safety procedures will be dismissed from the site.

4.3 HAZARD EVALUATION

Site-specific hazard evaluations of substances known or suspected in the X-326 Storage Unit will be included in the site specific safety and health plan and reviewed prior to initiation of field activities.

SUBMISSION DATE: SEPTEMBER 13, 2010

Appropriate personal protection levels, specific safety measures, and other pertinent information to be employed for the X-326 Storage Unit closure will also be presented in the site specific health and safety plan.

4.3.1 RADIOLOGICAL HAZARDS

Radioactive materials emit one or more of four types of potentially harmful radiation: (alpha, beta, gamma and neutron). Alpha radiation has limited penetrating ability and is usually stopped by clothing and outer layers of the skin. Alpha radiation poses little threat outside the body, but can be hazardous if materials that emit alpha radiation are inhaled or ingested. Beta radiation can cause harmful "beta burns" to the skin and change the subsurface blood system. Beta radiation is also hazardous if materials that emit beta radiation are inhaled or ingested. Use of protective clothing, coupled with scrupulous personal hygiene and decontamination, afford good protection against alpha and beta radiation. In addition, use of respiratory and other protective equipment can help keep radiation-emitting materials from entering the body by inhalation, ingestion, injection, or skin absorption.

Gamma and neutron radiation easily pass through clothing and human tissue and can also cause serious permanent damage to the body. Chemical-protective clothing affords no protection against these types of radiation.

A PORTS health physicist will be consulted prior to work. At dosage-rate levels greater than 2 millirem per hour (mrem/hr) (whole body gamma radiation), all site activities shall cease until the situation has been assessed and appropriate health and safety measures have been implemented.

All workers will submit baseline and exit bioassay urine samples for total uranium, gross alpha and technetium-99. The urine specimen will represent at least a full 24-hour period. The minimum acceptable volume is 1.0 liter. Monthly specimens for the routine bioassay program will be collected on Friday or the last day of the workshift. Additional uranium bioassay samples will be collected whenever an intake above plant allowable limits may have occurred.

The purposes of the bioassay program are to confirm the results of the air sampling program and confirm the effectiveness of the respiratory protection program.

4.3.2 CHEMICAL HAZARDS

Material Safety Data Sheets will be available at the job site for those chemicals utilized during closure. The SSHO will assist in identifying technical chemical hazard issues that are not addressed or are unclear on the Material Safety Data Sheets.

4.3.3 PHYSICAL HAZARDS

Physical hazards on the site include electric shock, tripping, falling, noise, and heat stress. To ensure a safe work place, the SSHO will conduct and document daily safety meetings and inspections. The SSHO must be familiar with OSHA construction industry and general industry standards. The SSHO shall ensure that all workers are informed of any physical hazards related to the site.

4.3.3.1 HEAVY EQUIPMENT

Some general safety concerns include:

- Follow established procedures;
- Get help whenever you are in doubt about a material's weight. Use the buddy system;
- Be sure that any gas cylinders are secured properly to heavy mobile equipment;
- Hard hats and safety glasses are to be worn at all times around heavy equipment. Additional protective gear will be worn as needed;
- Establish hand signal communication when verbal communication is difficult. Determine one person per work group to give hand signals to equipment operators;
- Only qualified/licensed people are to operate heavy equipment;
- Use chains, hoists, straps, and other safety equipment to aid in moving heavy materials consistent with hoisting and rigging standards;
- Never walk directly in back of or to the side of heavy equipment without the operators knowledge; and
- Be sure that no underground or overhead power lines, sewer lines, gas lines, or telephone lines will present a hazard in the work area.

4.3.3.2 TRENCHING

Not applicable.

4.3.3.3 ELECTRICAL

All electrical wiring used during the X-326 Storage Unit closure activities will satisfy the requirements of 29 CFR 1926, Subpart K, and any applicable local electric codes. Some specific electrical safety requirements follow:

- All electrical work will follow established procedures;
- All wiring will be done by a licensed electrician;
- All extension cords must have functional grounding conductors;
- All equipment that is not "double insulated" must have a functional grounding conductor;
- All electrical cords must be in good condition;
- In lieu of a documented "assured equipment grounding conductor program," ground fault protected circuits can be utilized; and

SUBMISSION DATE: SEPTEMBER 13, 2010

- Electrical cords and power tools will be inspected by the SSHO prior to use on the X-326 Storage Unit closure. Workers will inspect their power tools and cords.

4.3.3.4 TRIPPING AND FALLING

Workers will be apprised of any potential trip hazards through daily tool box health and safety meetings.

Whenever possible, trip and fall hazards will be eliminated or clearly identified with yellow "caution" tape. Impalement hazards to workers will be corrected as soon as they are identified.

4.3.3.5 UTILITIES AND POWERLINES

Not applicable.

4.3.3.6 NOISE

Workers will be protected from excessive noise exposure through equipment maintenance, noise monitoring, and hearing conservation programs which comply with 29 CFR 1910.95. The daily equipment inspection will include the exhaust system; perforated exhaust pipes and mufflers will be replaced as they are discovered. Noise level surveys in work areas and around equipment will be performed regularly and documented.

Hearing protective equipment will be required whenever continuous noise levels equal or exceed 85 Decibel (DBA) (slow meter response) and/or impulse/impact noise exceeds current ACGIH TLVs or OSHA 1910.95.

4.3.3.7 HEAT STRESS

Wearing Personal Protective Equipment (PPE) puts a hazardous waste worker at risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at hazardous waste sites, regular monitoring and other precautions are vital.

Heat stress may be of concern especially when the dry-bulb air temperature exceeds 70 °F. One or more of the following control measures can be used to help control heat stress if ambient temperatures above 70 °F are expected:

- Provision of adequate liquids to replace lost body fluids. Employees must replace water and salt lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement;
- Replacement fluids can be a 0.1 percent salt water solution, commercial mixes such as Gatorade or Quick Kick, or a combination of these and fresh water;

- Establishment of a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts for workers or earlier/later work schedules;
- Cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments;
- All breaks are to be taken in a shaded rest area;
- Employees will remove impermeable protective garments during rest periods;
- Employees will not be assigned other tasks during rest periods; and
- To prevent heat stress, all employees will be informed of the importance of adequate rest, acclimatization, proper diet, health hazards, recognition of heat illness, and first aid.

Because the incident of heat stress depends on a variety of factors, all workers, even those not wearing protective equipment, should be monitored.

- For workers wearing permeable clothing (e.g., standard cotton or synthetic work clothes), follow recommendations for monitoring requirements and suggested work/rest schedules in the current American Conference of Governmental Industrial Hygienists' (ACGIH) threshold limit values for heat stress. If the actual clothing worn differs from the ACGIH standard ensemble in insulation value and/or wind and vapor permeability, change the monitoring requirements and work/rest schedules accordingly.
- For workers wearing semipermeable or impermeable encapsulating ensembles, the ACGIH standard cannot be used. For these situations, workers should be monitored when the temperature in the work area is above 70 °F.

To monitor the worker, measure:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third; or,
- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).

If oral temperature exceeds 99.6 °F, shorten the next work cycle by one-third without changing the rest period.

If oral temperature still exceeds 99.6 °F at the beginning of the next rest period, shorten the following work cycle by one-third.

Do not permit a worker to wear a semipermeable or impermeable garment when his/her oral temperature exceeds 100.6 °F.

To monitor body water loss, measure weight on a scale accurate to +0.25 lb. at the beginning and end of each work day to see if enough fluids are being taken to prevent dehydration. Weights should be taken while

SUBMISSION DATE: SEPTEMBER 13, 2010

the employee wears similar clothing or, ideally, is nude. The body water loss should not exceed 1.5 percent total body weight loss in a work day.

Initially, the frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and level of physical work. The length of work cycle will be governed by frequency of the required physiological monitoring.

4.3.3.8 COLD STRESS

Cold stress may be of concern, especially when a wind-chill-adjusted temperature of 10 °F or less is expected. To control cold stress:

- Persons working outdoors in temperatures at or below freezing may be frostbitten. Extreme cold for a short time may cause severe injury to the surface of the body or result in profound generalized cooling, causing death. Areas of the body which have high surface-area-to-volume ratios such as fingers, toes, and ears, are the most susceptible;
- Two factors influence the development of cold injury: ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10 °F with a wind of 15 miles per hour (MPH) is equivalent in chilling effect to still air at -18 °F;
- As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration soaked;
- Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorized into:
 - Frostbite nip or initial frostbite: Characterized by sudden blanching or whitening of skin;
 - Superficial frostbite: Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient; and
 - Deep frostbite: Tissues are cold, pale, and solid; this is an extremely serious injury.
- Systemic hypothermia is caused by exposure to freezing and rapidly dropping temperature. Its symptoms are visually exhibited in five stages: (1) shivering, (2) apathy, listlessness, sleepiness, and sometimes rapid cooling of the body to less than 95°F, (3) unconsciousness, glassy stare, slow pulse, and slow respiratory rate, (4) freezing of the extremities, and finally, (5) death.
- Thermal socks, long cotton or thermal underwear, hard hat liners and other cold weather gear can aid in the prevention of hypothermia.
- Blankets, warm drinks (other than caffeinated coffee) and warm break areas are essential.

4.3.3.9 ILLUMINATION

While work is in progress, areas accessible to employees will be illuminated not less than the intensities identified on the following table located on page 4-10.

4.3.3.10 SANITATION

Provision of potable water, drinking cups, non-potable water, toilet facilities, washing facilities and other sanitation requirements will be in compliance with specifications of OSHA 1910.120 (n).

4.3.3.11 BODIES OF WATER

Not applicable.

4.3.3.12 CONFINED SPACE ENTRY

All employees required to enter into confined spaces shall observe requirements specified in ANSI Z117.1-1977 (or the latest revision thereof) and LPP-EH-5138, "Confined Space Program Description". Prior to entry, employees shall have satisfactorily completed a confined space training program. Depending upon risk level, atmosphere testing for oxygen deficiency, combustible gases and toxic agents may be required. High risk entries require issuance of a hazardous work permit (HWP) by the PORTS facility custodian prior to job activities.

4.3.3.13 SITE HOUSEKEEPING

Construction debris shall be handled in accordance with OSHA 1926.25.

MINIMUM ILLUMINATION INTENSITIES

FOOT-CANDLES	AREAS OR OPERATIONS
5	General site areas.
3	Excavation and waste areas, accessways, active storage areas, loading platforms, refueling and field maintenance areas.
4	Indoors; warehouses, corridors, hallways and exitways.
5	Tunnels, shafts and general underground work areas. (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration approved cap lights shall be acceptable for use in the tunnel heading.)
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms.)
30	First aid stations, infirmaries and offices.

* Table H-120.1 Minimum Intensities in Foot-Candles of 29 CFR 1910.120 provides additional technical information on illumination intensities.

4.4 AIR MONITORING

Air monitoring will be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection needed at each work site. Initial air monitoring will be conducted to identify any Immediately Dangerous to Life and Health (IDLH) and other dangerous situations, such as the presence of flammable atmospheres, oxygen-deficient environments, toxic levels of airborne contaminants, and radioactive materials. Then, periodic monitoring will be conducted when:

- Work begins on a different portion of the site;
- Contaminants other than those previously identified are being handled;
- A different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling); and
- Employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon).

4.4.1 RADIOACTIVE MATERIALS

Radiation and radioactive contamination will be monitored using survey instruments capable of measuring low levels of activity.

Initially, at least one breathing zone air particulate sample for the employee with the highest potential exposure will be collected per work crew per work shift during activities at the site. As results are obtained, it is anticipated that the frequency of sampling during a particular activity can be reduced. The criteria for air particulate sampling and radionuclide counting are addressed in DOE Order 5480.11.

Radioactive air particulate samples will be counted using a gas proportional counter, or alpha scintillation counter or counter with similar capabilities. As a minimum, gross alpha emitter airborne concentration and gross beta emitter airborne concentration will be determined and documented.

Preliminary samples showing activities above 25% of applicable Derived Air Concentration (DAC) values will be composited and sent to a laboratory for identification of the isotopes present and their concentrations. In addition, whenever the time weighted average gross alpha or gross beta airborne concentration measurements indicate that airborne radio nuclide concentrations may exceed 25% of the values provided in DOE Order 5480.11, isotopic analysis will be performed. When appropriate, several filters may be submitted as a single composite sample for isotopic analysis.

4.4.2 CHEMICAL HAZARDS

Air sampling and monitoring for chemical hazards will be conducted to the extent necessary to document compliance of the project with existing regulations. Monitors used will include direct-reading instruments and sample collecting devices. Direct reading instruments to be used during the X-326 Storage Unit closure activities may include photo ionization detectors, flame ionization detectors, colorimetric tube samplers, and

SUBMISSION DATE: SEPTEMBER 13, 2010

combustible gas/oxygen meters; sample collecting devices utilized may include filter cassettes, florisil tubes and charcoal tubes. Breathing zone samples for employees with the highest potential exposure for each contaminant will be initially taken at a minimum rate of one per work crew per shift until results obtained indicated a greater or lesser sampling frequency is warranted.

Caution must be exercised when utilizing direct-reading instruments. Since mixtures of chemicals may be encountered and direct-reading air monitoring instrument may react to the total mixture, individual concentrations of specific compounds may not be determined by these instruments. Direct-reading instruments are not to be used when negative interference is a possibility. For situations involving exclusively positive interference, it will be assumed that the mixture is made up entirely of the chemical with the lowest airborne exposure limit. This means that the composite reading obtained will be compared with lower applicable value of the ACGIH TLVs or OSHA PELs for that specific substance to determine required respiratory protection levels.

Site hazard evaluation is a dynamic and on-going process. Respiratory protection levels may change based on measured atmospheric concentrations of detected contaminants. Respiratory protection levels will be re-evaluated if chemical analytical results from samples collected during the field activities indicated that such re-evaluation is warranted; i.e., if additional compounds are detected or if airborne concentrations significantly differ from previous measurements. The results of the air monitoring will be used as on-site documentation of contaminant exposure levels and to select the appropriate level of personal protective equipment.

4.4.3 PHYSICAL HAZARDS

Monitoring for physical hazards will consist of on-site inspections and use of direct-reading instruments. These instruments may include sound level meters, noise dosimeters, various types of thermometers, radio frequency analyzers, illumination meters and thickness gauges.

4.4.4 EQUIPMENT CALIBRATION AND MAINTENANCE

All monitoring equipment will be calibrated and maintained according to manufacturer's instructions.

4.5 PERSONAL PROTECTIVE EQUIPMENT

Personnel must wear protective equipment when response activities involve known or suspected atmospheric contamination, when vapors, gases, or particulates may be generated, or when direct contact with skin-affecting substances may occur. Full-face respirators protect lungs, gastrointestinal tract, and eyes against air toxicants. Chemical-resistance clothing protects the skin from contact with skin-destructive and absorbable chemical. Good personal hygiene limits or prevents ingestion of material.

Equipment to protect the body against contact with known or anticipated chemical hazards has been divided into four categories according to the degree of protection afforded as outlined in OSHA 1910.120, Appendix A.

- Level A: Chemical-protective, totally-encapsulating suit; NIOSH-approved, full-face piece Self Contained Breathing Apparatus (SCBA) or combination SCBA/air line; chemical-resistance inner and outer gloves; chemical-resistant boots with steel toes and shanks; disposable protective suit,

gloves and boots; and two-way radios. These items should be worn when the highest level of respiratory, skin, and eye protection is needed.

- Level B: Chemical-resistance splash suit and coveralls (e.g., PVC saranex); NIOSH approved, full-face piece SCBA or combination SCBA/air line; chemical-resistance inner and outer boots and gloves; hard hats; and two-way radios. Level B should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection or when the atmosphere contains less than 19.5% oxygen.
- Level C: Chemical-resistant splash suit and coveralls; NIOSH-approved, full-face cartridge respirators; chemical-resistant inner and outer boots and gloves; hard hats; and two-way radios. Should be selected when the types of airborne substances are known, the concentrations measured, direct contact with exposed skin poses no hazard and the criteria for using air-purifying respirators are met.
- Level D: Coveralls (cloth), boots (leather or rubber) with steel toes and shanks, chemical resistant outer boots; and hard hat. This is primarily a work uniform providing minimal protection for situations when the atmosphere contains an unknown hazard. Optional items include face shield, safety glasses or goggles; gloves; and hearing protectors.

4.5.1 RESPIRATORY PROTECTION

The selection and use of respirators will be in accordance with the publications listed below:

- ANSI Z88.2 (1980) "Practices for Respiratory Protection."
- NIOSH/OSHA/USCG/EPA (1985) Occupational Health and Safety Guidance Manual on Hazardous Waste Site Activities. US GPO, Washington, D.C.
- 29 CFR 1910.134, "Respiratory Protection."
- 29 CFR 1926.58, "Asbestos."
- The following requirements will be adhered to:
- As a minimum, only properly cleaned, maintained, NIOSH/MSHA-approved full-face air purifying respirators will be used on-site;
- Selection of respirator, as well as any decisions regarding upgrading or downgrading of respiratory protection, will be made by the SSHO;
- Air-purifying cartridges will be replaced on a regular basis, as determined by the SSHO;
- No employee shall be assigned to tasks requiring the use of respirators if, based upon the most recent examination, a physician determines that the employee will be unable to function normally wearing a respirator or that the safety or health of the employee or other employees will be impaired by use of a respirator. All respirator users are required to have physicals annually with the most recent physician's written opinion permitting respirator use;

SUBMISSION DATE: SEPTEMBER 13, 2010

- Contact lenses are not to be worn while using any type of respiratory protection;
- Air-line respirators shall be assembled according to manufacturer's specifications regarding hose length, couplings, valves, regulators, manifolds, etc. Though not anticipated, air-line respirators may need to be used on-site;
- Excessive facial hair (for example, beards) prohibits proper face fit and effectiveness of respirators. Persons required to wear full-face piece respirators of SCBAs must not have interfering facial hair. All personnel wearing full-face piece respirators of SCBAs will be required to be shaven to permit proper fit;
- Regular eyeglasses cannot be used with full-face respirators (they can break the facepiece seal). Inserts must be utilized;
- The respiratory protection program utilized on-site will be documented and in compliance with OSHA, 29 CFR 1910.134 and ANSI Z88.2-1980. This requires annual respirator-usage training and annual fit testing of the respiratory equipment (fit testing every 6 months if asbestos exposure is a possibility). Program documentation and employee records for training and fit testing must be reviewed and approved by ESH; and
- Where respirators are designated for protection against contaminants, the employee shall be permitted to change canisters or cartridges whenever an increase in breathing resistance, contaminant odor breakthrough, or other malfunction is experienced.

Based on the hazard evaluation, the use of respiratory protection is anticipated to be limited for the majority of tasks involved. Level D protection (with the modifications listed in Section 4.5.2 of this HASP) has been selected for site activities unless on-site monitoring data indicates a necessity for upgrading personal protective equipment. Air monitoring will be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the initial and ongoing job appropriate level(s) of employee protection. These monitoring procedures are discussed in Section 4.4 of this HASP (air monitoring).

4.5.2 PROTECTIVE CLOTHING

Based on available health and safety information, initial protective clothing for this work shall be as follows:

- Disposable acid-resistant coveralls with hood and boot covers;
- Boots (leather or rubber) with steel toes and shanks;
- Chemical-resistant outer boots;
- Hard hat, as applicable;
- Latex inner gloves;
- Chemical-resistant outer gloves or equivalent;

- Hearing protection, as applicable;
- If not wearing a full-face piece respirator or SCBA, chemical splash goggles will be worn at all times in the work area. Contact lenses will not be permitted in the contaminated area; and
- Sleeves will be taped to gloves and cuffs taped to boots, as applicable.

Upgrading or downgrading of the selected level of protective equipment will be the decision of the SSHO based on assessment of potential hazards.

4.6 SITE CONTROL

A site control program which meets requirements specified in OSHA 1910.120(D) will be included in the site safety and health plan.

Appropriate warning signs will be posted in readily visible locations in or near contaminated work areas. Inadvertent entry by unauthorized personnel will be prevented by utilizing barricade tape to mark the boundaries of hazardous waste sites within the PORTS security fence.

Access to contaminated work areas will be restricted to persons authorized by ESH. A daily roster containing the date, the person's name, the person's signature, organization, the time of entry, and the time of exit will be kept of all persons working in such areas. Any visitors to the area must present proper identification and be authorized to be on site. Visitors must comply with all aspects of the HASP.

Each restricted access area at PORTS will be divided into three zones, an exclusion zone, a decontamination zone, and a support zone. The basic premise behind this type of procedure is to limit the transportation of contaminants to clean areas by confining and controlling activities.

4.6.1 EXCLUSION ZONE

The exclusion zone includes the actual work area where contamination is likely to be the highest. This zone has the higher inhalation exposure potential and/or presents a potentially higher probability of skin contact with cutaneous or percutaneous effecting chemicals. As its name implies, access to the exclusion zone is limited, and the exclusion zone is bounded by an access barrier. The exclusion zone is entered after donning the proper equipment and passing through the contaminant-reduction zone. The exclusion zone should be large enough to contain the working area and small enough to be easily controlled. No eating, drinking, or smoking is allowed in the exclusion zone. The hotline can be as rigid as a fence or simply signs or barrier tape. The main point is to control access into the area. Field personnel will not enter the exclusion zone alone. Entry will be in teams of at least two individuals working under the buddy system. Visitors are not permitted to enter exclusion zones.

4.6.2 DECONTAMINATION ZONE

The decontamination zone includes the areas immediately surrounding the exclusion zone. This zone has the next highest inhalation hazard, but does not have a high probability of skin contact with cutaneous or percutaneous effecting chemicals. This zone is the area in which the actual decontamination of equipment and PPE takes place. As its name implies, the intent is to reduce contamination, i.e., become progressively

SUBMISSION DATE: SEPTEMBER 13, 2010

cleaner. This means that after decontaminating auxiliary equipment, the most contaminated PPE (e.g., boots, gloves) should be doffed first, the coveralls, other PPE, and finally, the respirator. If the site is heavily contaminated, it may be necessary to have a wash station available for removing surficial contamination before starting the disrobing procedure. Visitors are not permitted to enter decontamination zones.

Personnel decontamination will be completed according to the guidance given in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Personnel and personnel protective equipment will be decontaminated using water or a mixture of detergent and water. Liquid and solid wastes generated during decontamination will be properly collected and disposed. Prior to leaving this zone, workers will be frisked for radioactive contamination.

Every attempt will be made to reduce contamination on equipment and articles to levels that are as low as reasonably practicable. Whenever possible, steam cleaning and the use of detergents and water will be used in place of solvents and chemical decontaminants. Solid and liquid wastes produced during decontamination will be collected for proper disposal.

4.6.3 SUPPORT ZONE

The support zone (clean zone) covers all areas immediately outside of the decontamination zone. Adverse exposure to chemical is unlikely in this zone. This zone is usually used to store supplies and as a dressing area. Personnel or equipment which have been in the exclusion zone must be decontaminated before re-entering the support zone. Visitors may enter support zones under the following conditions:

- Visitors must be under continuing escort by personnel qualified in at least 24 hours of health and safety training for hazardous waste sites;
- Visitation occurrence is irregular or intermittent and for short-term entry only; and
- Purpose of visitation is observatory in nature or involves the performance of incidental, non-hazardous tasks.

4.7 GENERAL WORK PRACTICES

- At least one copy of this general HASP and applicable site safety and health plan will be available at each work site.
- Contaminated protective equipment, such as respirators, hoses, boots, etc., will not be removed from the exclusion zone or decontamination zone until it has been cleaned, or properly packaged and labeled.
- Food and beverages will not be permitted or consumed in the restricted-access areas. Possession or use of tobacco products and the application of cosmetics are also prohibited in these areas.
- Containers will be moved only with the proper equipment and will be secured to prevent dropping or loss of control during transport.

SUBMISSION DATE: SEPTEMBER 13, 2010

- During activities all personnel will be required to wash their hands and face before eating, drinking, smoking, or applying cosmetics.
- Portable eyewash stations will be located in the restricted-access areas near work activities.
- All personnel will be required to field wash (hands and face) as a minimum at the end of their shift before leaving the job site if they might have been contaminated. Hands and face will be washed during breaks.
- All personnel will avoid contact with potentially contaminated substances. Walking through puddles or mud and kneeling on the ground should be avoided whenever possible.
- Equipment will not be placed on possibly contaminated surfaces.
- Field personnel must observe each other for signs of toxic exposure and heat/cold illness. Indications of adverse effects include, but are not limited to:
 - Changes in complexion and skin discoloration
 - Changes in coordination
 - Changes in demeanor
 - Excessive salivation and pupillary response
 - Changes in speech pattern
- Field personnel are cautioned to inform each other of non-visual effects of illness such
 - Headaches
 - Dizziness
 - Nausea
 - Blurred vision
 - Cramps
 - Irritation of eyes, skin, or respiratory tract

4.8 TRAINING AND INFORMATION PROGRAMS

- Training and information programs must comply with requirements specified in OSHA 1910.120(E) and (I). General site workers and the SSHO are required to have satisfactorily completed an off-site 40-hour health and safety training course for conducting work at hazardous waste sites and a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. On-site supervisors (e.g., SSHO) responsible for employees performing hazardous waste operations are required to have also completed an 8-hour specialized course on management of such operations. Workers and supervisors must receive 8 hours of refresher training each year. At least one member of each crew will have current certificates in Cardiovascular Pulmonary Resuscitation (CPR) and first aid. Employees expected to respond to hazardous emergency situations shall have been trained in how to respond to expected emergencies.

Prior to beginning the fieldwork tasks, field personnel and subcontractors will be given a training program/briefing by the SSHO and ESH. This session will include, but is not limited to, the following topics:

- Names of SSHO and designated alternates

SUBMISSION DATE: SEPTEMBER 13, 2010

- Site history and site control measures
- Specific hazards (including toxicological data) and location of materials safety data sheets (MSDS)
- Hazard recognition and symptoms of overexposure
- Standard operation procedures and use of PPE and engineering controls
- Decontamination (personnel and equipment)
- Emergency procedures and locations of emergency equipment
- Respirator fit test and use
- Relevant aspects of the 29 CFR 1910.120(I)(2) site safety and health plan requirements listed at the beginning of the HASP

Throughout the course of the field program, field management personnel and the SSHO will be responsible for ensuring the implementation of and adherence to the health and safety program. In addition, the following items will be discussed during briefings between the project representative and personnel on-site. It should be kept in mind that these points are not exclusive, and any other potentially hazardous situation that may be known by the parties involved in this safety briefing should be outlined at the time of the meeting.

- Hazardous substances (suspected or known contaminated media that personnel may be exposed to)
- Hazard assessment (toxic effects, reactivity, warning signs)
- Levels of personal protection to be employed in work areas
- Work area monitoring and the atmospheric concentrations which warrant changes in the level of respiratory protection
- Personnel exposure emergency procedure (skin contact, inhalation, ingestion, falls, etc.): Notify ESH (or shift superintendent at ext. 3025)
- Potential or actual fire or explosion emergency procedure: Call emergency #2444. Relate location and status of the fire or explosion and injuries to personnel. Response will be immediate.
- Potential or actual ionizing radiation exposure emergency procedure: Notify Energy Systems ESH of suspected or actual exposure to ionizing radiation (e.g., ingestion of uranium particulates). ESH will respond by notifying either the shift superintendent or health physics personnel as the situation warrants.
- Environmental accidents emergency procedure (spread of contamination outside existing site): Call shift superintendent at ext. 3025 and relate incident. The shift superintendent or his representative will be the authority at the site of the incident.
- Emergency signals and/or codes: (See Part 4.11.2 of this section for a description of emergency alarms)
- Emergency routes: (This will depend upon worksite location)
- Emergency phone number: 2444

4.9 MEDICAL SURVEILLANCE

As a minimum, the medical monitoring program will satisfy the requirements of 29 CFR 1910 including, but not necessarily limited to, those provided in 29 CFR 1920.120 (the hazardous waste operations standard) and 29 CFR 1910.134 (the respiratory protection standard).

All participating personnel must have a copy of a written opinion from the examining physician dated not more than 12 months prior to on-site operations. This opinion includes the following:

- The results of the medical examination and tests;
- The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response;
- The physician's recommended limitations upon the employees assigned work with special emphasis on fitness for duty, including the ability to wear any required personal protective clothing and equipment under conditions (i.e., temperature extremes) that may be expected at the work site; and
- A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

4.10 HAZARDOUS WASTE SITE EMERGENCY PROCEDURES

The SSHO shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate procedures are followed. The following standard emergency procedures will be used by on-site personnel.

4.10.1 INJURY IN EXCLUSION OR DECONTAMINATION ZONE

In the event of an injury in the exclusion zone, all site personnel shall exit the exclusion zone and assemble at the decontamination line. The on-site inspector will evaluate the nature of the injury and the affected person should be decontaminated to the extent practical prior to movement to the support zone. Appropriate first aid will be initiated, and an immediate request will be made for an ambulance (if necessary) and the designated medical facility notified (if required). No persons will re-enter the exclusion zone until the cause of injury or symptoms is determined.

4.10.2 INJURY IN THE SUPPORT ZONE

In the event an injury occurs in the support zone, the SSHO must be notified immediately. Appropriate first aid will be administered and, if necessary, the injured individual will be transported to the designated medical facility. If the injury does not affect the performance of site personnel, operations may continue.

SUBMISSION DATE: SEPTEMBER 13, 2010

4.10.3 FIRE/EXPLOSION

In the event of a fire or explosion at the site, the PORTS fire department will be alerted and all personnel should move to a safe distance from the area (See Section 4.11 for a list of emergency phone numbers).

4.10.4 PROTECTIVE EQUIPMENT FAILURE

If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and designated buddy will immediately leave the exclusion zone. Re-entry to the exclusion zone will not be permitted until functionally sound equipment has been donned.

4.11 PORTS EMERGENCY PROCEDURES

Emergency phone numbers and directions to the nearest medical facility will be posted at conspicuous places in the support zone. The policy at PORTS is to maintain an emergency preparedness program to provide the maximum practical protection for employees, DOE and DOE contractor personnel, members of the public, and property in the event of emergencies involving activities on the PORTS site. Because of the nature of the facility, visitors to PORTS are always accompanied by an escort. The escort will be familiar with emergency situation response, the locations of monitoring stations, etc., and can direct visitors should an emergency situation occur. The following information is provided in case of alarms or emergencies.

4.11.1 REPORTING AN EMERGENCY

Any person discovering an emergency condition at a RCRA facility should immediately alert the Plant Emergency Director (PED) and the Plant Emergency Response Team by one of the following means:

- Dial 2444 on any phone. Give your name and all vital information to the answering parties. The plant emergency squad will respond;
- Actuate a red fire alarm box - if possible wait nearby to provide the emergency squad with details of the emergency;
- Use the plant radio system to notify X-300 (plant control facility); and
- Pick up a red emergency phone. X-300 will answer. Give your name and details of the emergency.

After alerting the plant emergency director and the plant emergency response team, the person discovering the emergency should do whatever can safely be done to minimize the emergency.

In all emergencies, no matter how the alarm is initiated, it is important that the PORTS cascade coordinator is on the receiving end of an initial request for the emergency response team. The only way the coordination personnel would not be included in the initial alert sent in by one of the means above would be because of a malfunction of their equipment. Any time an alarm is received by the police or fire department and cascade coordination does not respond with immediate contact of police and fire departments, it will be assumed that cascade coordination did not receive the alarm and it will be the responsibility of the fire department captain or the police console operator to pick up the red emergency phone and include the cascade coordinator in the initial alert.

4.11.2 RECOGNIZING EMERGENCY ALARMS

The steady sounding of sirens atop the X-330 and X-326 building is an alert signal to listen for a public address announcement.

- The wailing or intermittent sounding of these sirens is a signal to take cover or protective action. It means an attack against our country has been detected.
- Building horns - a continuous blast means leave the building immediately and go to a monitoring station or assigned assembly point.
- Gas release sirens are local alarms. They are located at X-330 Tails and Side Feed Facilities, X-326 ERP and PW Sampling Areas, X-700 Furnace Stand, X-342, X-344 and the HF Storage Unit. When you hear a continuous modulated high-frequency siren at one of these facilities, evacuate the area and seek a position upwind.
- Any signal consisting of a series of seven short tones, sounded three times, is a request for personnel accountability. Report in person or by phone to your home base as soon as possible.
- A radiation alarm is a continuous sounding of building horns and the local radiation cluster nitrogen horns. Flashing red lights outside will be on. Immediately leave the affected building and go to a monitoring station.

4.11.3 MONITORING STATION LOCATIONS

- Trailer southeast of X-100
- Fire station (X-106)
- Frame building east of X-105
- Inside X-630 pumphouse, north end
- Cement building south of X-530 switchyard

Additional monitoring stations will be established as needed near investigated units. Any such proposed stations will be identified in the appropriate site safety and health plan.

4.12 RECORDS AND REPORTING REQUIREMENTS

The contractor will notify the DOE site office, PORTS safety department, the project manager, and the responsible field manager of a fatality or serious accident, as required in DOE Order 5484.1A. Fatal accidents will be investigated by the PORTS safety department and/or DOE representatives as the situation requires.

The contractor will be responsible for the recording and reporting of illnesses and injuries in accordance with PORTS and OSHA requirements. Copies of these reports will be provided to the contractor's project files and the Portsmouth facility's safety department personnel. Recordable occupational accidents and illnesses are those defined in DOE Order 5484.1, "Environmental Protection, Safety, and Health Protection Information Reporting Requirements" and OSHA 29 CFR 1910 and 1926.

SUBMISSION DATE: SEPTEMBER 13, 2010

The contractor will submit a DOE form 5484.3 "Individual Accident/Incident Report" for each occurrence for which reporting is required under DOE 5484.1. Forms will be submitted to the Portsmouth facility's safety department and the cognizant DOE operations office. Additionally, the contractor should comply with all reporting requirements as identified in OSHA 29 CFR 1910 and 1926.

The contractor will maintain records of employee's exposures to radioactive or toxic materials or other harmful physical agents for a period of 30 years. In addition, a copy of all radiation exposure records will be transferred to the Portsmouth facility's health physics department upon employee termination or completion of the contract. Reporting requirements of DOE Order 5484.1 will be adhered to by the contractor and Portsmouth facility.

All site workers are required by DOE Order 231.1A to notify the PORTS Safety Department and cognizant DOE Site Office of any unusual occurrences. An "unusual occurrence" is any unusual or unplanned event having programmatic significance such that the event adversely affects or potentially affects the integrity of the site, the performance and reliability, or safety of the project. Notification of occurrences similar to the following will be required:

- Any substantial degradation of a barrier designed to contain radioactive or toxic material or any substantial release of radioactive or toxic material past this barrier (e.g., overflow of a water treatment pond, contaminant release into a stream, or contamination released beyond the site boundary);
- Accidents involving the transport of radioactive, hazardous, or toxic materials;
- Any fire or explosion which affects the integrity of the site or project;
- Any condition, resulting from natural events or manmade activities, which substantially affects or threatens performance, reliability, or safe operation (e.g., site flooding, wind damage, soil stability problems, personnel operation errors which create hazardous conditions);
- Any radiation or chemical exposure in excess of applicable limits;
- Any incidence or breach of access control by unauthorized personnel;
- Any acts of vandalism or major theft occurring at a site; and
- Any release of contamination outside the controlled area; including personnel, equipment, and roadways.

The contractor will maintain a central file of all enforcement inspections and reports along with violations and abatement actions that will be available for inspection by either the PORTS safety department or DOE's personnel. The contractor will also maintain a central file of formal employee health and safety complaints and reports of their disposition. Upon request, these will be made available for inspection by affected employees or their authorized representative.

The contractor will maintain documentation of all employee training, including the OSHA required 40 hours training, site specific training, new employee orientation, refresher courses, respirator fit test results, and respirator training in addition to other requirements specified by OSHA.

4.13 COMPLAINTS

Employees are encouraged to report to the SSHO either directly or through their authorized employee representative any conditions or practices which they consider detrimental to their health or safety or which they believe are in violation of applicable health and safety standards. Such complaints may be made orally or in writing. The contractor will also have available in the workplace DOE Form F-5480.4, "Occupational Safety and Health Complaint Form," to be used in reporting violations.

Employees who believe that an imminent danger exists that threatens human or environmental health, death or serious physical harm, are encouraged to bring this matter to the immediate attention of the SSHO for resolution. In the event of the inadequate corrective action, the employee and/or authorized representative may also contact the local agency having jurisdiction, the contractor's project office, or ESH by telephone and set forth with reasonable particularity the basis for their request for an immediate inspection. Competent medical personnel, which may include a physician, will evaluate the symptoms of illnesses that could seriously affect a worker's health and safety.

SUBMISSION DATE: SEPTEMBER 13, 2010

TABLES

SUBMISSION DATE: SEPTEMBER 13, 2010

TABLE 1
X-326 CONTAINMENT CAPACITY CALCULATIONS

Area Designation	1	2	3	4	5	6	WEST L	EAST L
Total square feet	968	3082	2372	5947	3520	1917	11876	8928
Area deductions	18	24	9	58	40	9	64	284
Available square feet	950	3058	2363	5890	3481	1908	11812	8644
Pallet area required	51.48	51.48	51.48	51.48	51.48	51.48	51.48	51.48
Maximum number pallets	18	59	45	114	67	37	229	167
Maximum gallons stored	3960	12980	9900	25080	14740	8140	50380	36740
Containment gallons required	396	1298	990	2508	1474	814	5038	3674
Gross volume in gallons	589	1895.96	1467.36	3657.20	2161	1185	7323.44	5359.28
Gallon reduction for pallets	179.10	587.05	447.06	1132.56	666	367.59	2278.55	1661.65
Available containment gallons	409.9	1308.91	1020.29	2524.63	1495	816.98	5044.89	3697.63
Containment capacity percent of maximum volume stored	10.4%	10.0%	10.3%	10.0%	10.1%	10.0%	10.0%	10.0%

Therefore, the containment capacity meets the requirements of 40 CFR 270.15(A)(3).

Maximum Volume Stored = 21,644 Cubic Feet
= 161,920 Gallons

SUBMISSION DATE: SEPTEMBER 13, 2010

TABLE 2
MAXIMUM NUMBER OF CONTAINERS, X-326 UNIT

Container Volume	Maximum Number
85 gallon	1,570
55 gallon	2,400
30 gallon	2,450
20 gallon	2,450
5 gallon	2,450
2.47 gallon (polybottle)	3,000
1.7 gallon	3,000

SUBMISSION DATE: SEPTEMBER 13, 2010

TABLE 3
X-326 SAMPLING PARAMETER LIST

CATEGORY/ METHOD NUMBER ¹	ANALYTES
METALS/ 6010, 7470	ANTIMONY, ARSENIC, BARIUM, BERYLLIUM, CADMIUM, CHROMIUM, COBALT, COPPER, LEAD, MERCURY, NICKEL, SELENIUM, SILVER, THALLIUM, TIN, VANADIUM, ZINC
VOLATILE ORGANIC COMPOUNDS/ 8260	AS LISTED IN THE APPENDIX TO OAC RULE 3745-54-98
SEMIVOLATILE ORGANIC COMPOUNDS/ 8270	AS LISTED IN THE APPENDIX TO OAC RULE 3745-54-98
HERBICIDES/ 8151	AS LISTED IN THE APPENDIX TO OAC RULE 3745-54-98
PESTICIDES/ 8081, 8141	AS LISTED IN THE APPENDIX TO OAC RULE 3745-54-98
DIOXINS AND FURANS/ 8280	AS LISTED IN THE APPENDIX TO OAC RULE 3745-54-98
OTHER INORGANICS/ 9010, 9030	CYANIDE, SULFIDE

¹ METHOD NUMBERS FROM U.S. EPA SW-846, TEST METHODS FOR EVALUATING SOLID WASTE.

SUBMISSION DATE: SEPTEMBER 13, 2010

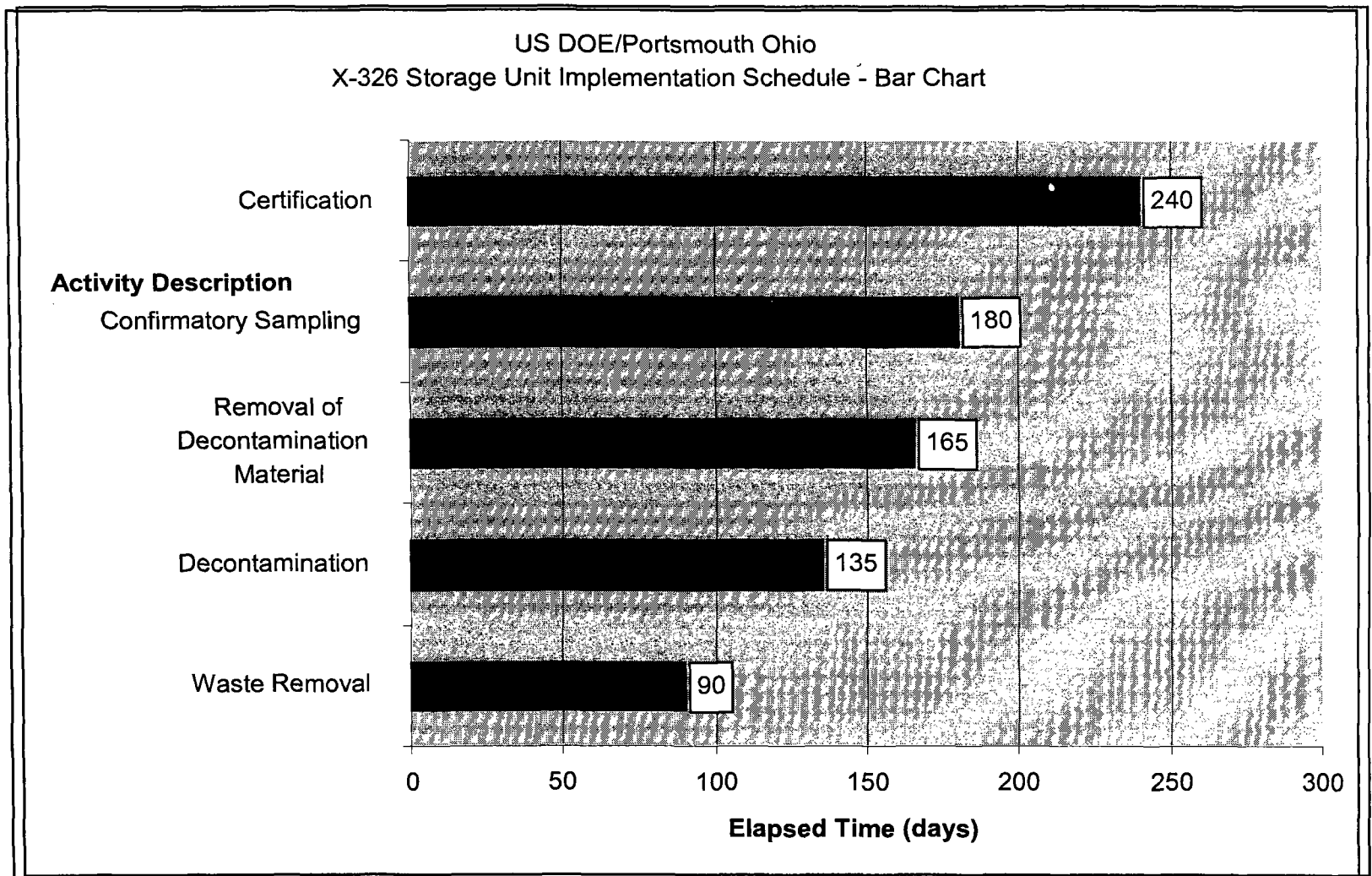


Table 4. Implementation Schedule for Closure of the X-326 Storage Unit

SUBMISSION DATE: SEPTEMBER 13, 2010

FIGURES

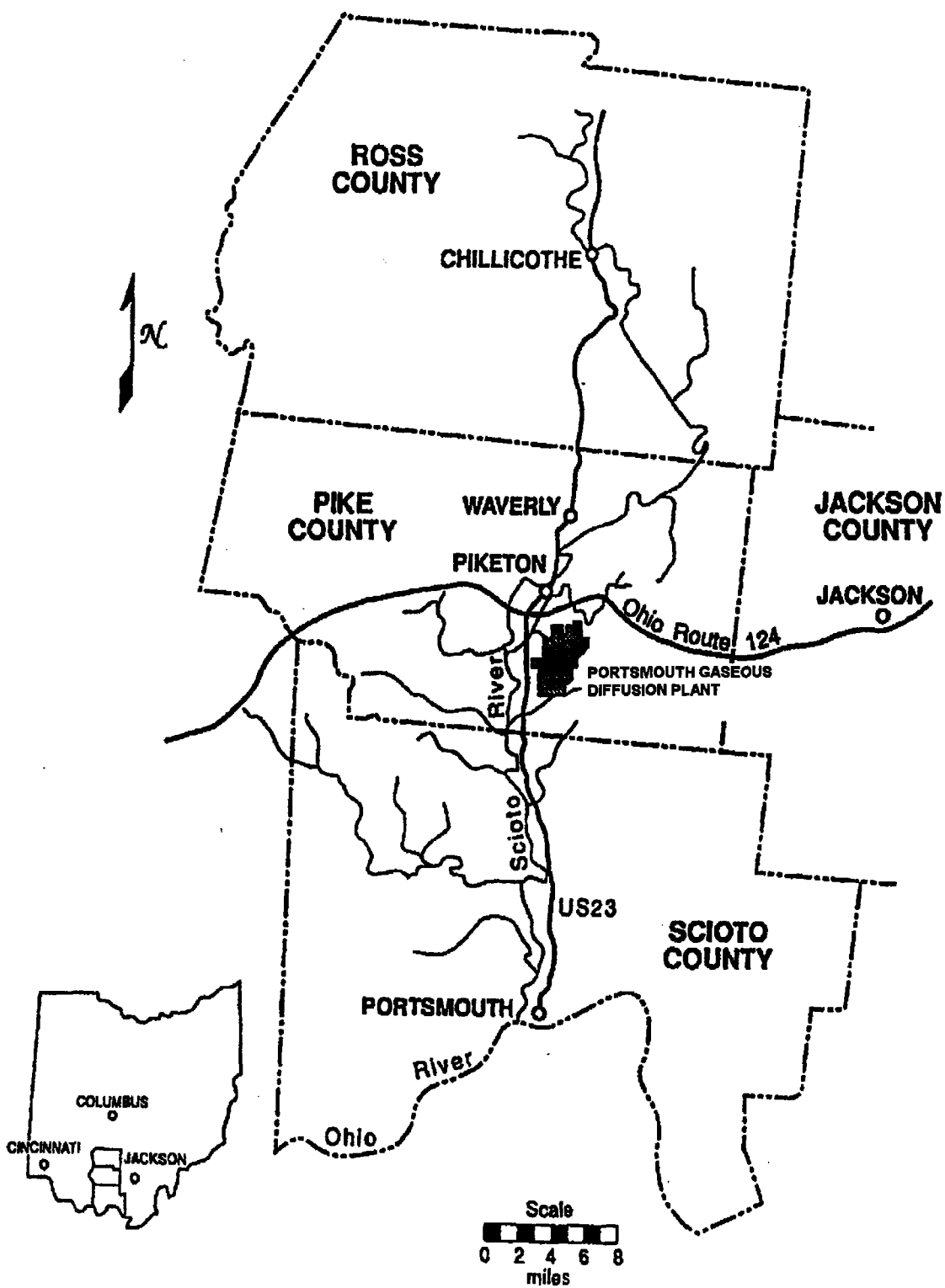


Figure 1. Location of the Portsmouth Gaseous Diffusion Plant

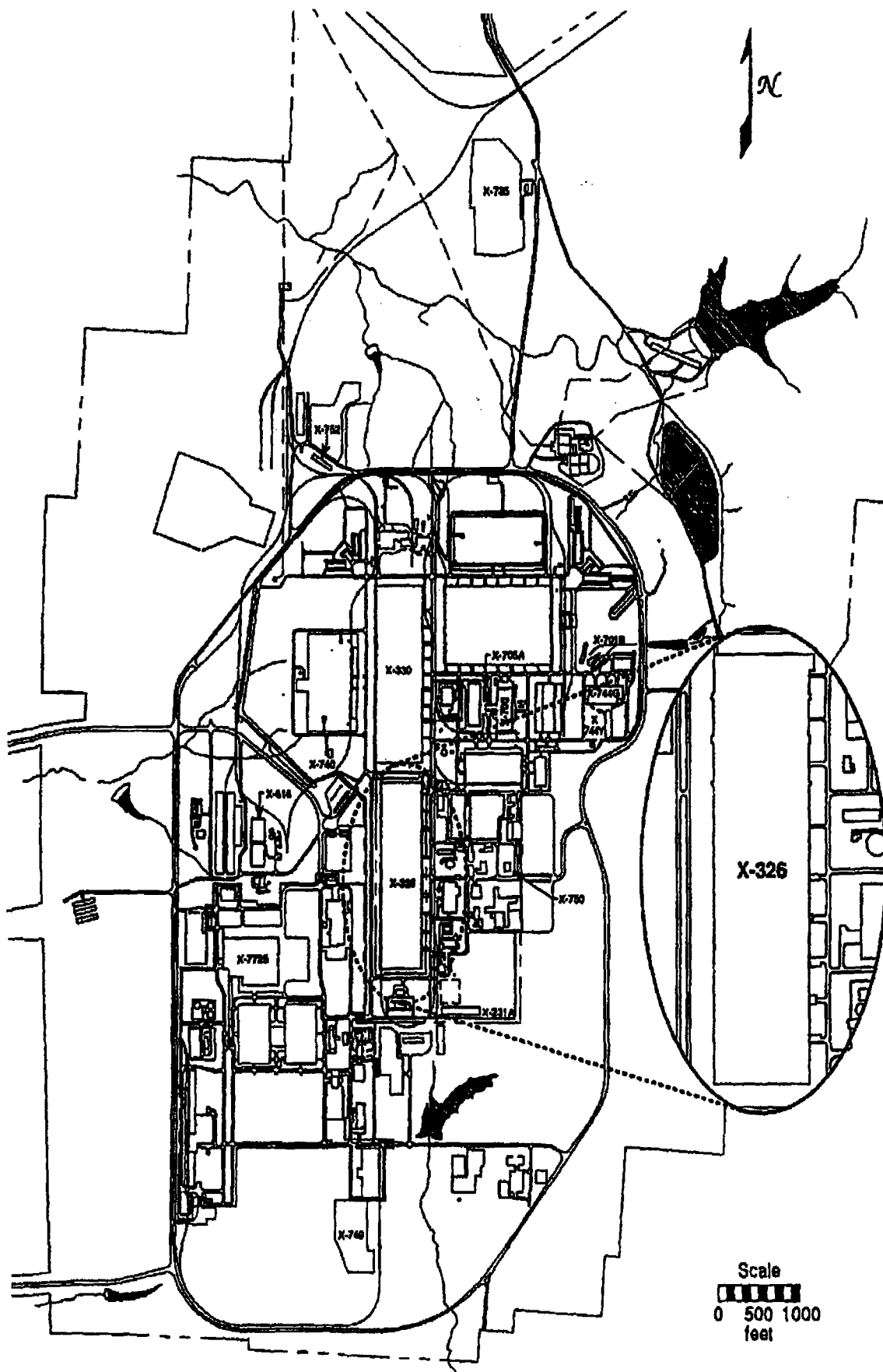


Figure 2. Location of X-326 at the Portsmouth Gaseous Diffusion Plant

Figure 3. Topographic Details of the X-326 Facility

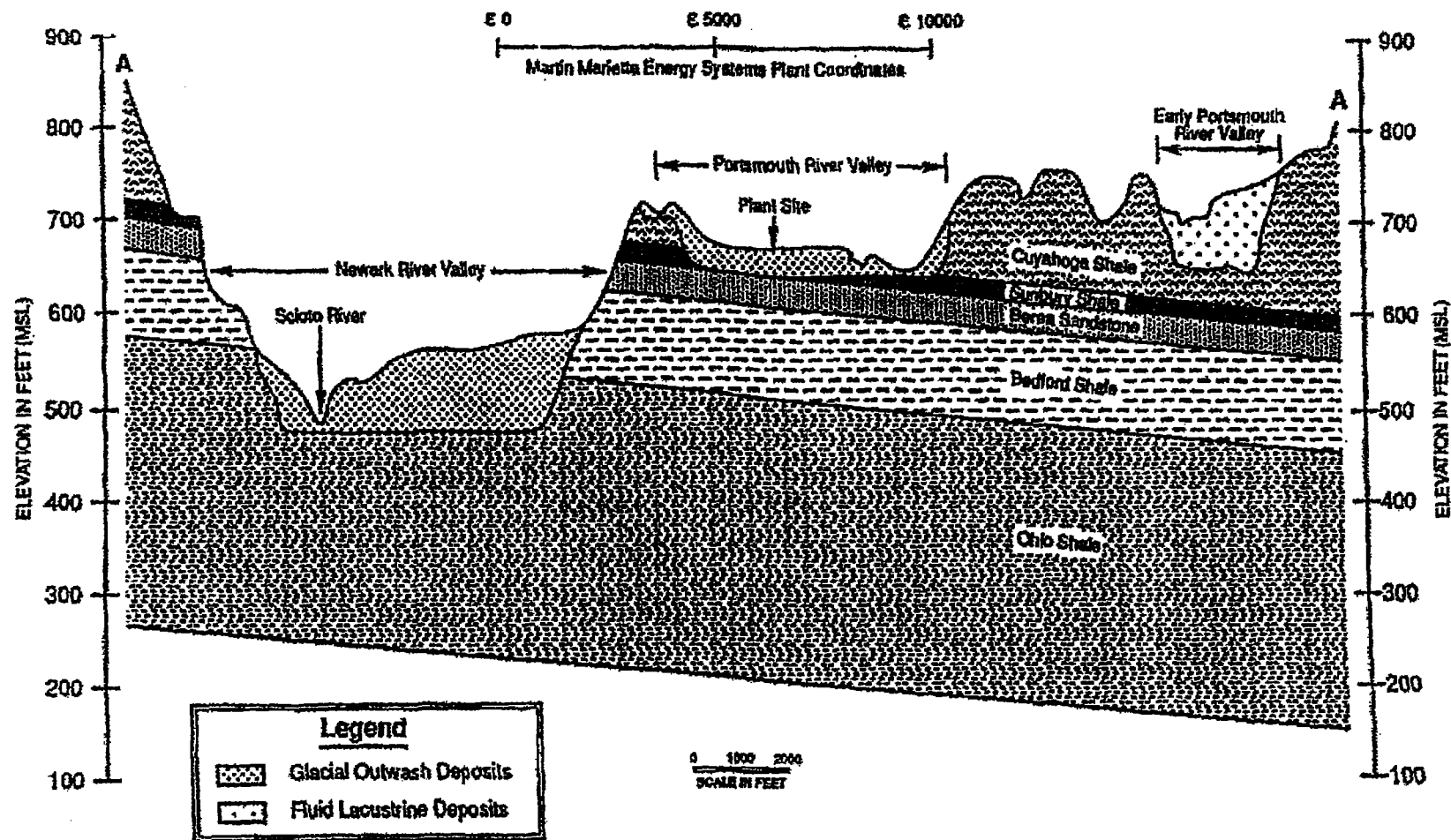


Figure 4. Regional Structural Cross Section through PORTS

Figure 5. Existing Wells Near the X-326 Facility

SUBMISSION DATE: SEPTEMBER 13, 2010

APPENDIX A

**STRATIGRAPHIC AND CONSTRUCTION LOGS OF
WELLS AND SOIL BORINGS IN THE VICINITY OF
THE X-326 STORAGE UNIT**

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. X760-01G

PORTS RFI
PIKETON, OHIO

DATE DRILLED: 5/20/91

SURFACE ELEVATION: 869.70 ft. msl

TOTAL DEPTH: 33.5 ft.

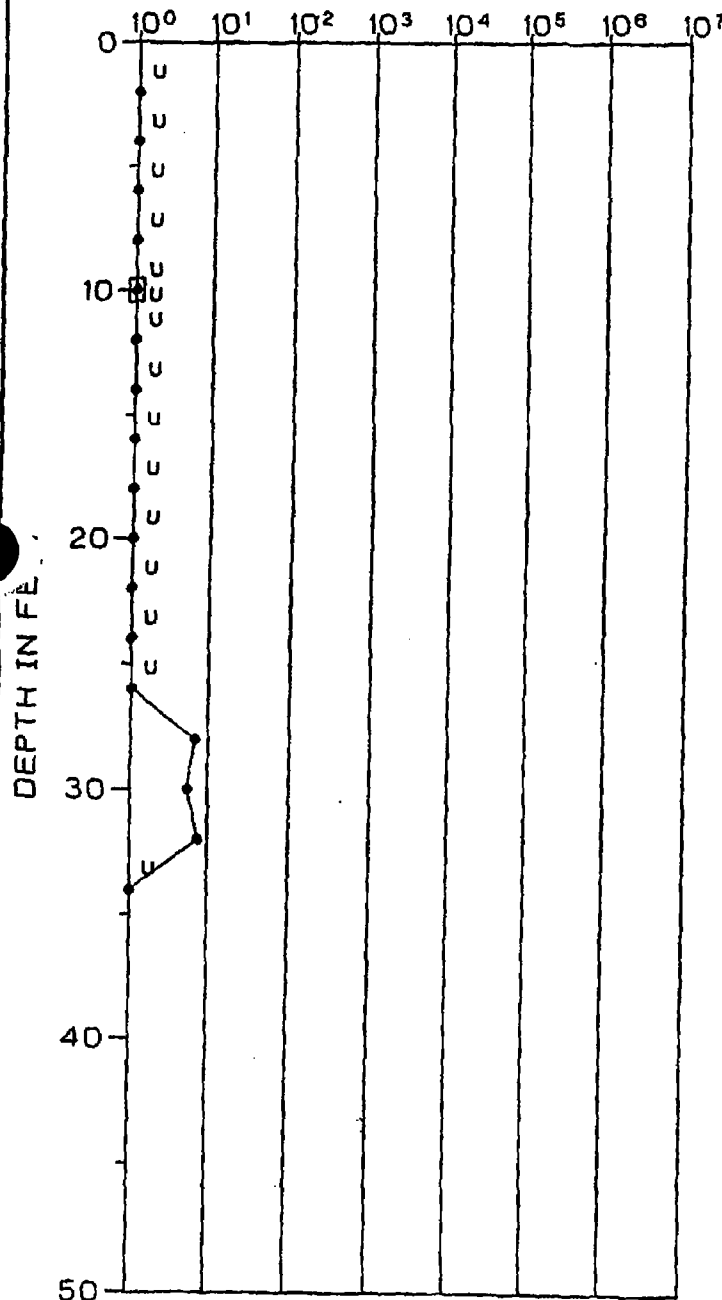
TCE CONCENTRATIONS

- Field GC Value (ppb) upper right
- Lab Value (ppb) lower right

QA CODES

upper right

lower right



NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

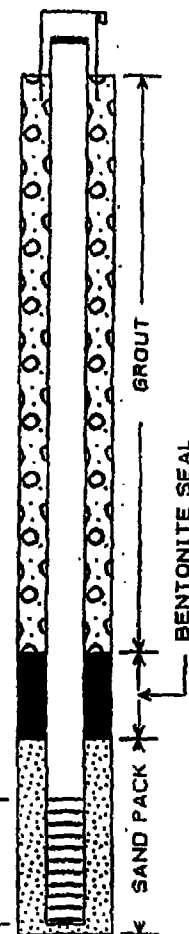
M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

* - Unknown peaks

SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE



TD = 33.5 ft.

WELL LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. SASW-SB102

PORTS RFI
PIKETON, OHIO

DATE DRILLED: 5/7/91

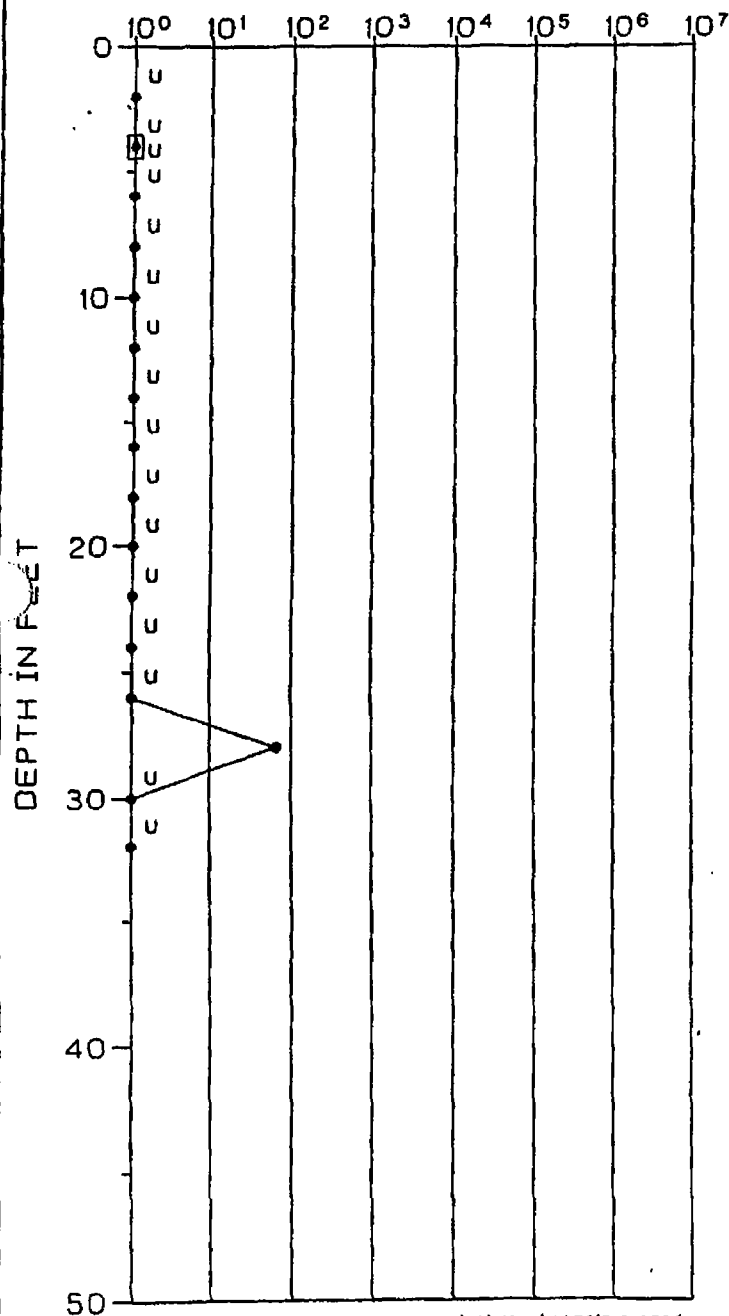
SURFACE ELEVATION: 670.90 ft. msl

TOTAL DEPTH: 33.0 ft.

TCE CONCENTRATIONS

- Field GC Value (ppb) upper right
○ Lab Value (ppb) lower right

QA CODES



SYMBOLS

UNIT

CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE

TD = 33.0 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met

M - Qualitative value; matrix problems encountered

U - Analyte not detected

Q - Questionable peak

* - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. RCW-SB101

PORTS RFI
PIKETON, OHIO

DATE DRILLED: 5/8/91

SURFACE ELEVATION: 672.20 ft. msld

TOTAL DEPTH: 34.1 ft.

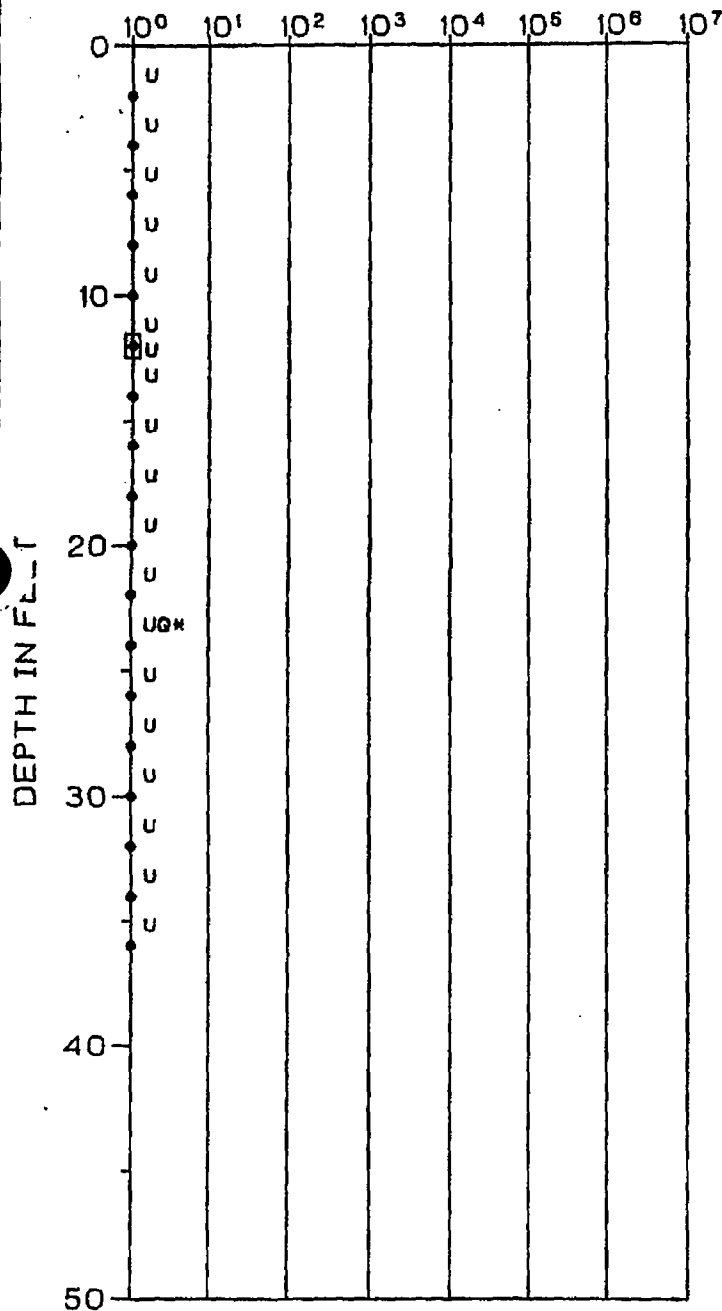
TCE CONCENTRATIONS

- Field GC Value (ppb) upper right
- Lab Value (ppb) lower right

QA CODES

upper right

lower right



SYMBOLS UNIT

CL	MINFORD CLAY
SA	GALLIA SAND
	SUNBURY SHALE

TD = 34.1 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

x - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. STSW-101G

PORTS RFI
PIKETON, OHIO

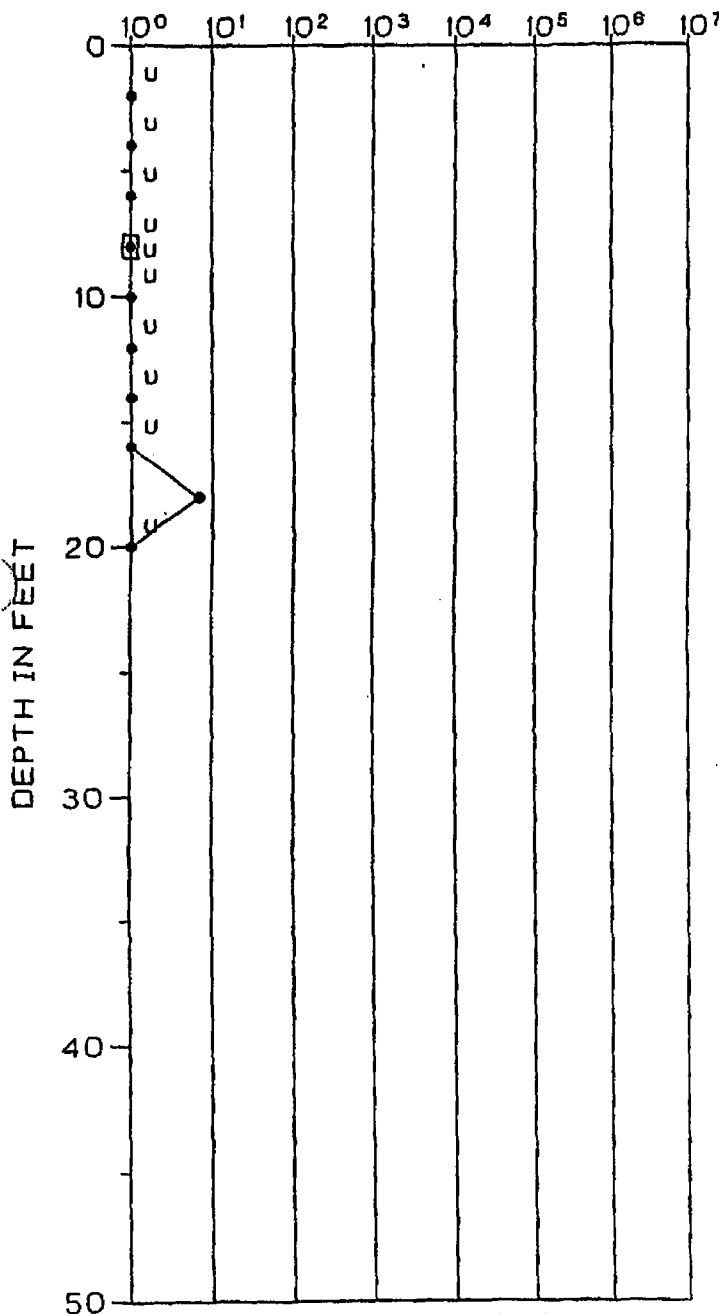
DATE DRILLED: 8/27/91

SURFACE ELEVATION: 657.70 ft. msl

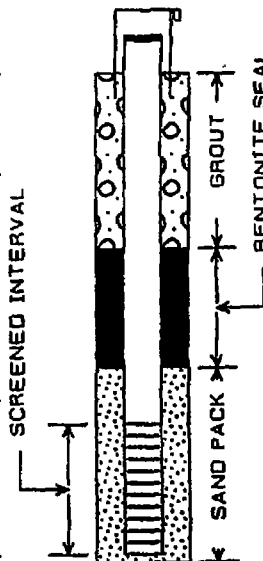
TOTAL DEPTH: 19.8 ft.

TCE CONCENTRATIONS

• Field GC Value (ppb) QA CODES
□ Lab Value (ppb) upper right
 lower right



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE



TD = 19.8 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met

M - Qualitative value; matrix problems encountered

U - Analyte not detected.

Q - Questionable peak

x - Unknown peaks

WELL LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. SASW-SB101

PORTS RF1
PIKETON, OHIO

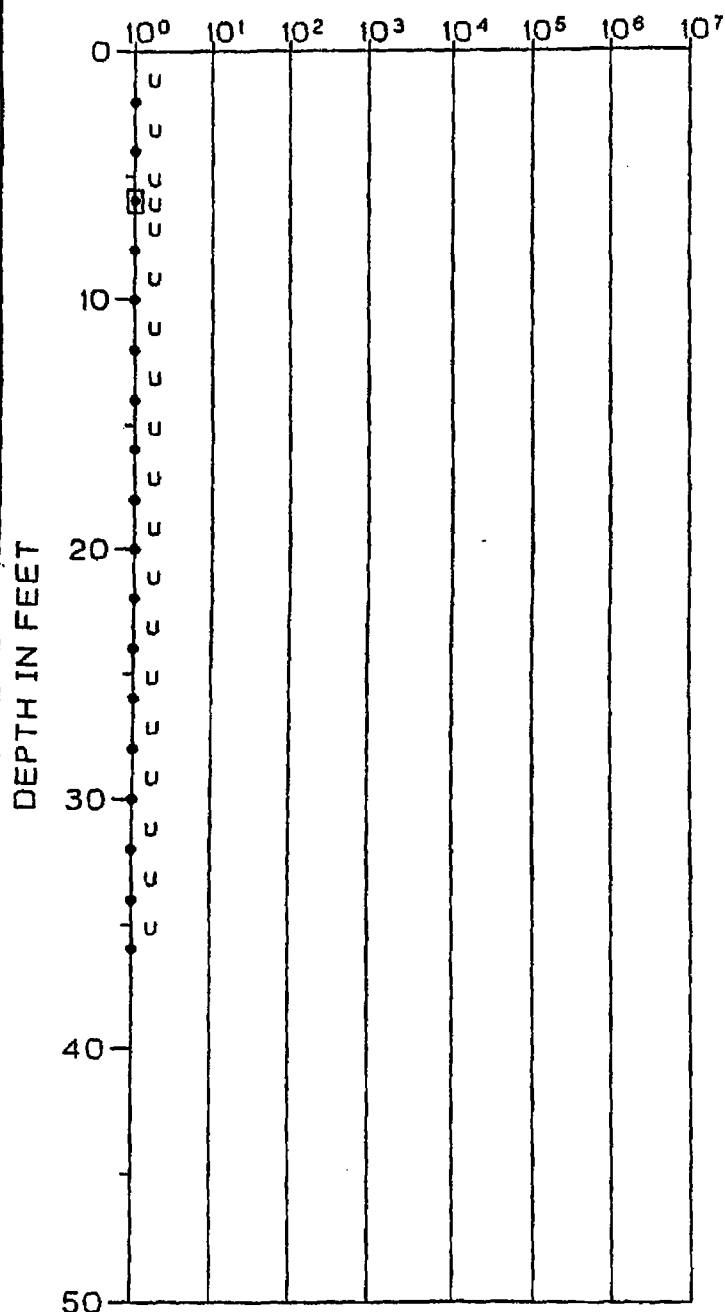
DATE DRILLED: 5/21/91

SURFACE ELEVATION: 871.50 ft. msld

TOTAL DEPTH: 35.5 ft.

TCE CONCENTRATIONS

• Field GC Value (ppb) QA CODES
○ Lab Value (ppb) upper right
 lower right



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE

TD = 35.5 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

* - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. RCW-SB102

PORTS RF1
PIKETON, OHIO

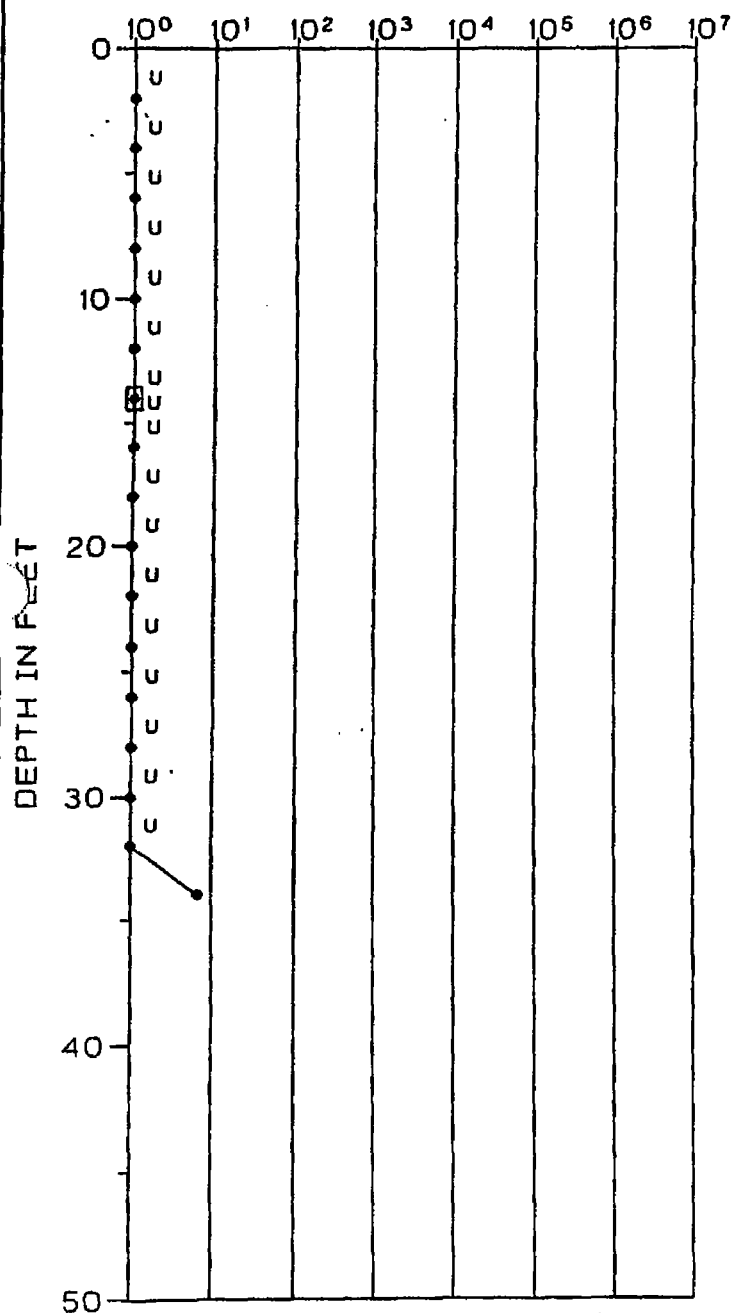
DATE DRILLED: 5/23/91

SURFACE ELEVATION: 670.70 ft. msl

TOTAL DEPTH: 35.5 ft.

TCE CONCENTRATIONS

- Field GC Value (ppb) QA CODES
 upper right
@ Lab Value (ppb) lower right



SYMBOLS

UNIT

CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
	SUNBURY SHALE

TD = 35.5 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

* - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. RCW-SB103

PORTS RF1
PIKETON, OHIO

DATE DRILLED: 5/22/91

SURFACE ELEVATION: 870.70 ft. msl

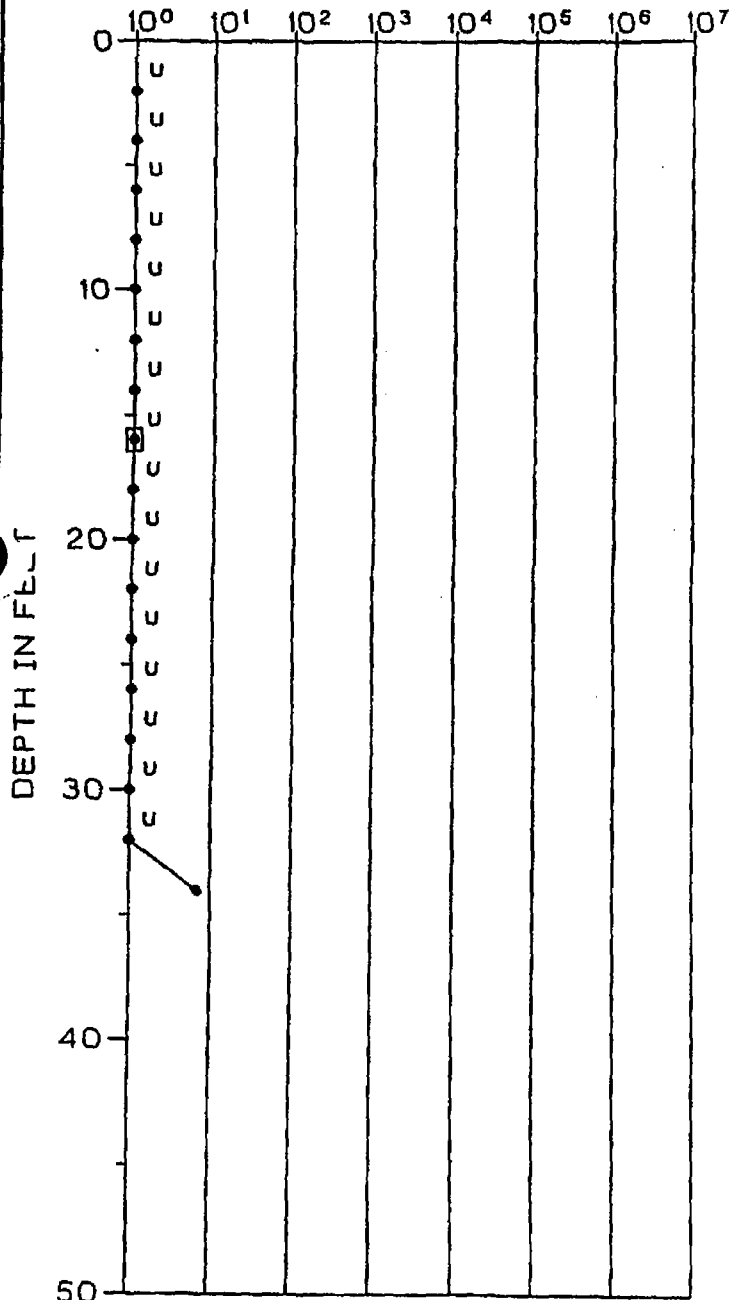
TOTAL DEPTH: 33.7 ft.

TCE CONCENTRATIONS

• Field GC Value (ppb) upper right
○ Lab Value (ppb) lower right

QA CODES

lower right



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE

TD = 33.7 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

x - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. STSW-SB104

PORTS RFI
PIKETON, OHIO

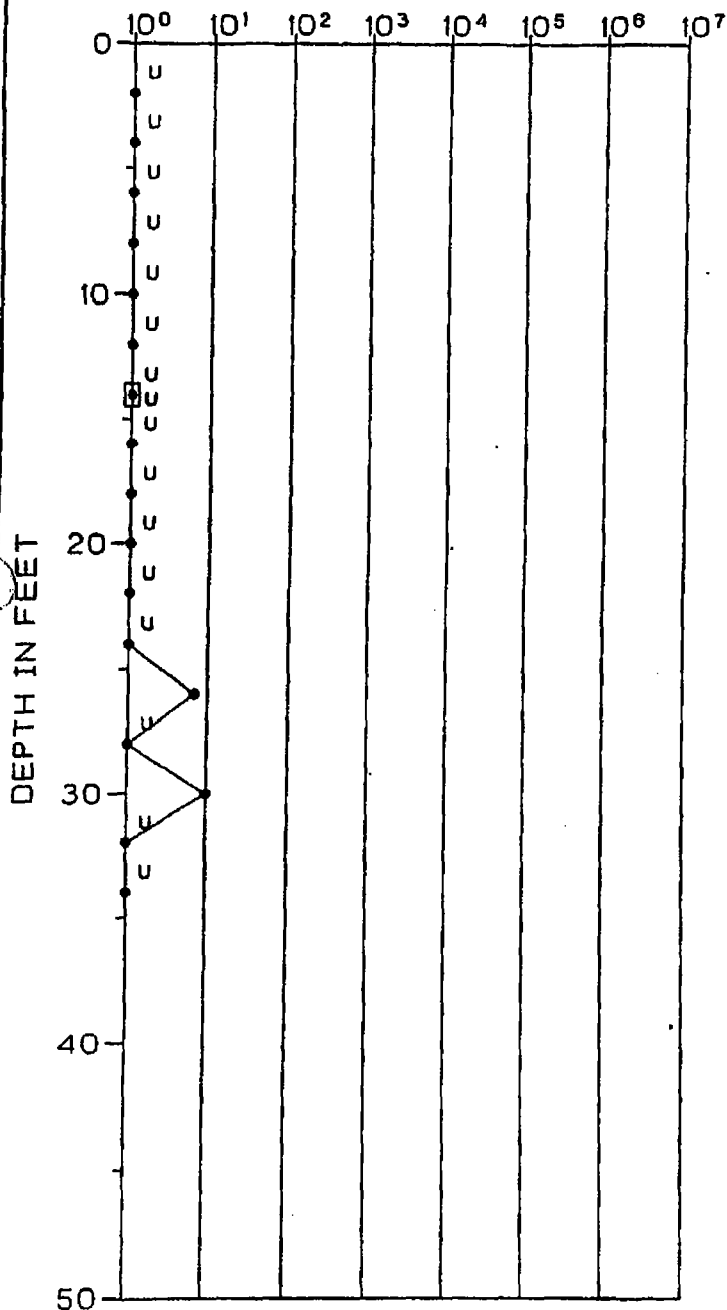
DATE DRILLED: 5/3/91

SURFACE ELEVATION: 869.60 ft. msl

TOTAL DEPTH: 33.5 ft.

TCE CONCENTRATIONS

• Field GC Value (ppb) QA CODES
 □ Lab Value (ppb) upper right
lower right



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
	SUNBURY SHALE

TD = 33.5 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met

M - Qualitative value; matrix problems encountered.

U - Analyte not detected

Q - Questionable peak

* - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. RCW-SB104

PORTS RFI
PIKETON, OHIO

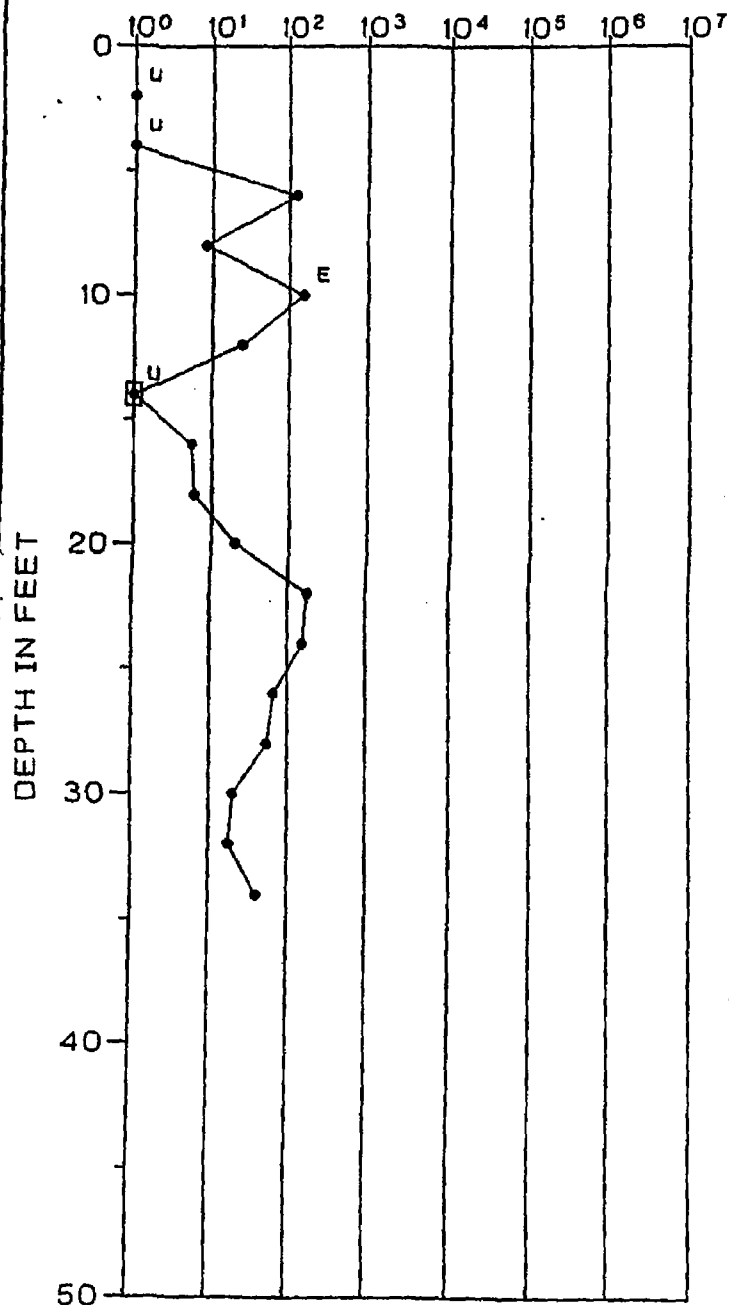
DATE DRILLED: 5/22/91

SURFACE ELEVATION: 670.50 ft. msl

TOTAL DEPTH: 32.5 ft.

TCE CONCENTRATIONS

• Field GC Value (ppb) QA CODES
 upper right
□ Lab Value (ppb) lower right



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
	SUNBURY SHALE

TD = 32.5 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

* - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. X626-01G

PORTS RFI
PIKETON, OHIO

DATE DRILLED: 4/18/91

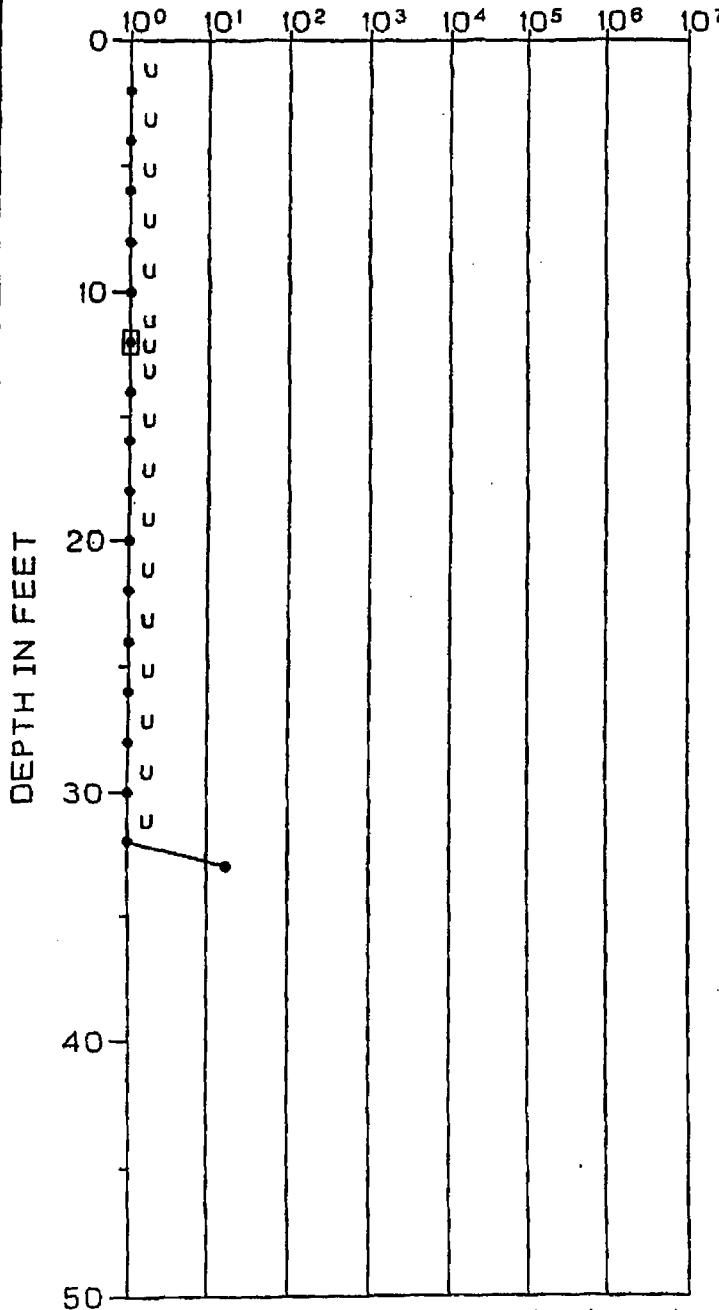
SURFACE ELEVATION: 669.70 ft. msld

TOTAL DEPTH: 33.0 ft.

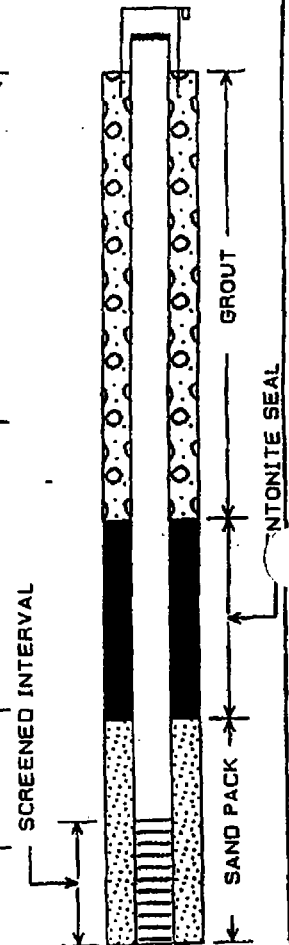
TCE CONCENTRATIONS

• Field GC Value (ppb) upper right
○ Lab Value (ppb) lower right

QA CODES



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE



TD = 33.0 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

O - Questionable peak

X - Unknown peaks

WELL LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. X626-07G

PORTS RF1
PIKETON, OHIO

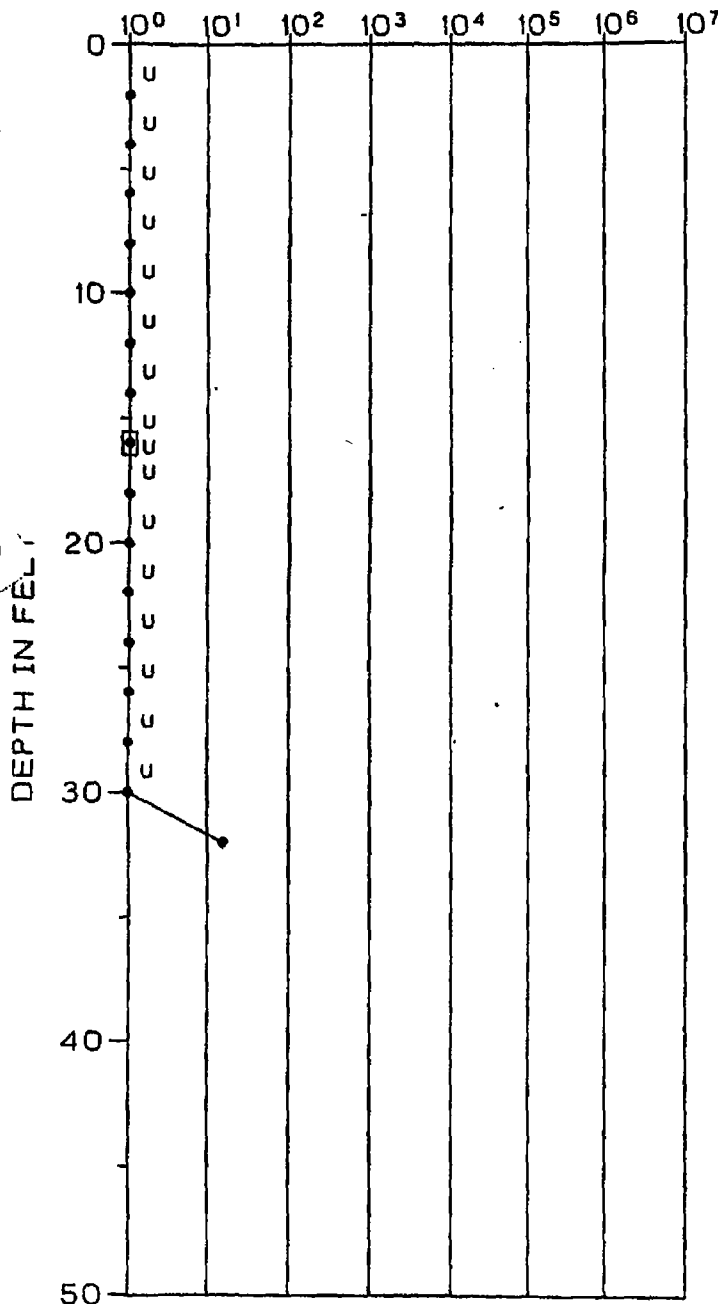
DATE DRILLED: 4/18/91

SURFACE ELEVATION: 889.70 ft. msld

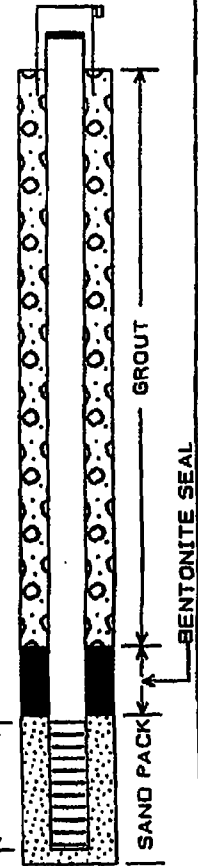
TOTAL DEPTH: 31.3 ft.

TCE CONCENTRATIONS

• Field GC Value (ppb) QA CODES
□ Lab Value (ppb) upper right
 lower right



SYMBOLS	UNIT
CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
SH	SUNBURY SHALE



TD = 31.3 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected

Q - Questionable peak

* - Unknown peaks

WELL LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION Log TCE Concentration vs. Depth

BORING NO. X626-O6M

PORTS RFI
PIKETON, OHIO

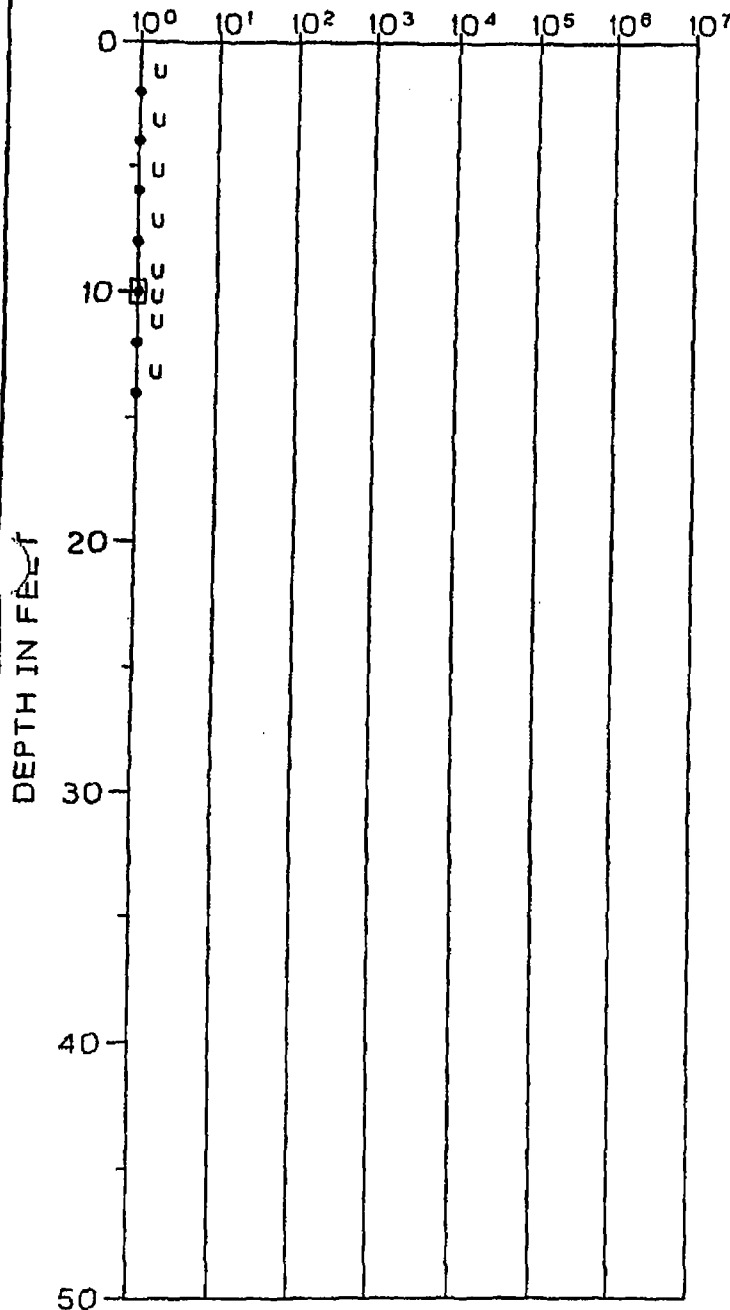
DATE DRILLED: 5/2/91

SURFACE ELEVATION: 870.10 ft. msl

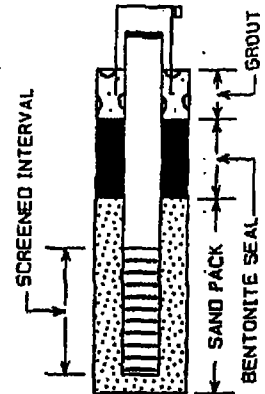
TOTAL DEPTH: 13.0 ft.

TCE CONCENTRATIONS

- QA CODES
• Field GC Value (ppb) - upper right
o Lab Value (ppb) - lower right



SYMBOLS	UNIT
SL	MINFORD SILT
CL	MINFORD CLAY
TD = 13.0 ft.	



NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

* - Unknown peaks

WELL LOG

Geraghty & Miller Inc.
Environmental Services

RCRA FACILITY INVESTIGATION

Log TCE Concentration vs. Depth

BORING NO. RCW-SB105

PORTS RFI
PIKETON, OHIO

DATE DRILLED: 4/29/91

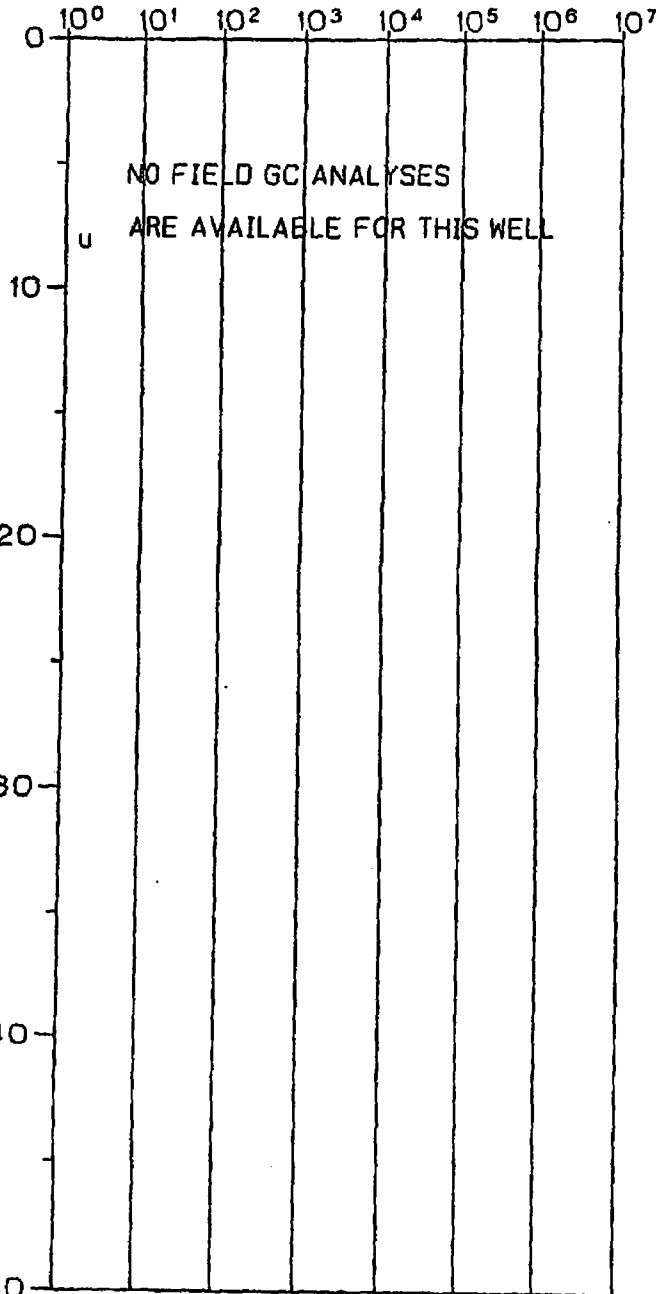
SURFACE ELEVATION: 670.10 ft. msld

TOTAL DEPTH: 31.5 ft.

TCE CONCENTRATIONS

- Field GC Value (ppb) upper right
○ Lab Value (ppb) lower right

QA CODES



SYMBOLS

UNIT

CL	MINFORD CLAY
SL	MINFORD SILT
SA	GALLIA SAND
	SUNBURY SHALE

TD = 31.5 ft.

NOTE: E - Qualitative value; concentration of sample exceeds upper limit of gas chromatograph.

J - Qualitative value; not all quality control criteria met.

M - Qualitative value; matrix problems encountered.

U - Analyte not detected.

Q - Questionable peak

* - Unknown peaks

BORING LOG

Geraghty & Miller Inc.
Environmental Services

WELL F-19

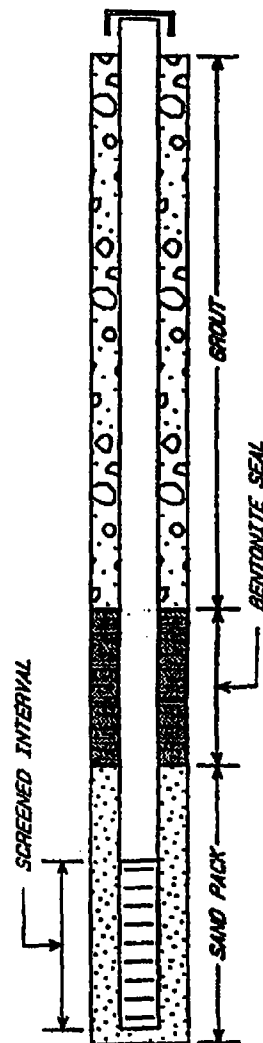
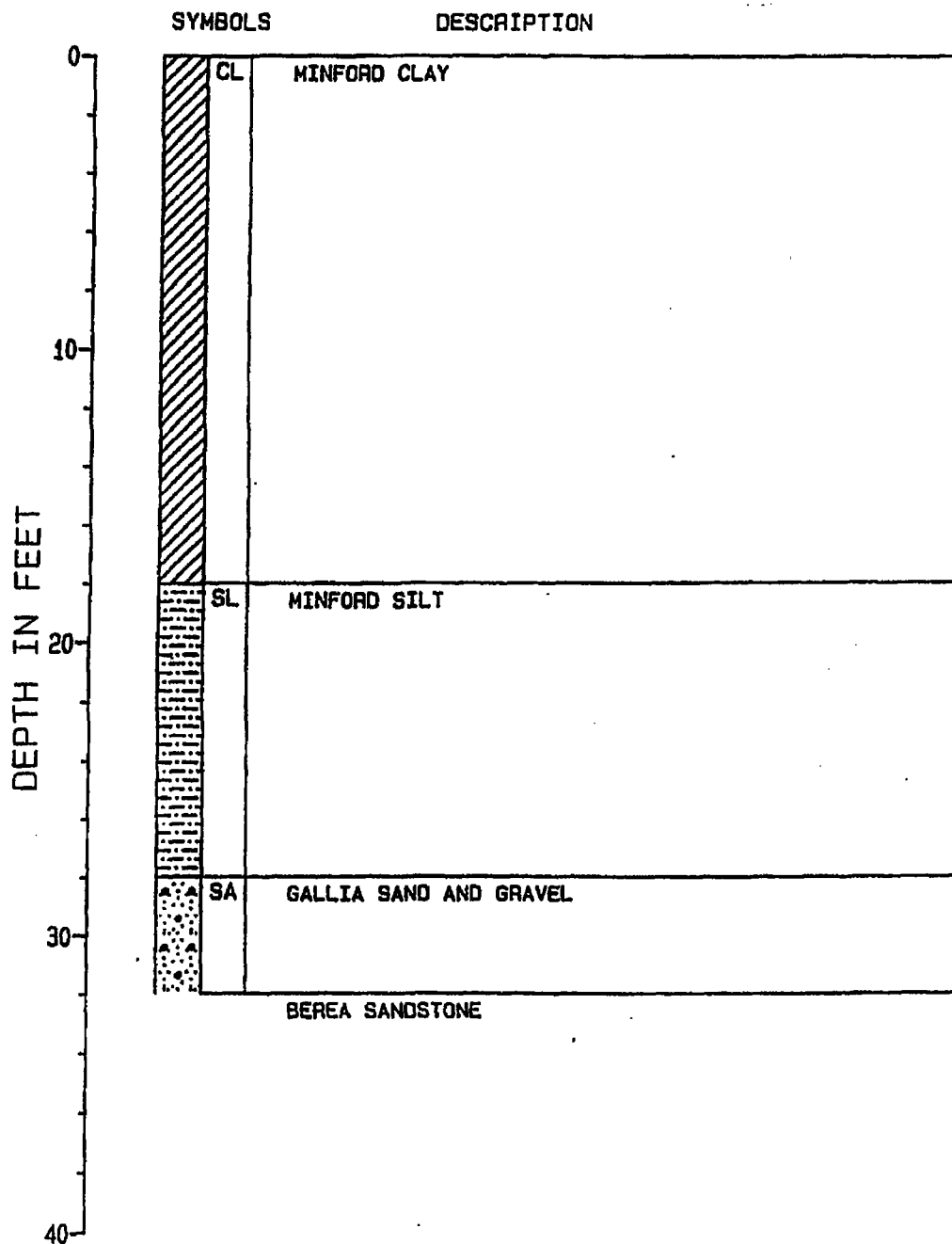
PORTS
PIKETON, OHIO

DATE DRILLED: 9/1/88

SURFACE ELEVATION: 675.82 ft. msl

TOP OF
CASING ELEVATION: 676.99 ft. msl

TOTAL DEPTH: 32.0ft. msl



WELL LOG

Geraghty & Miller Inc.

WELL F-20

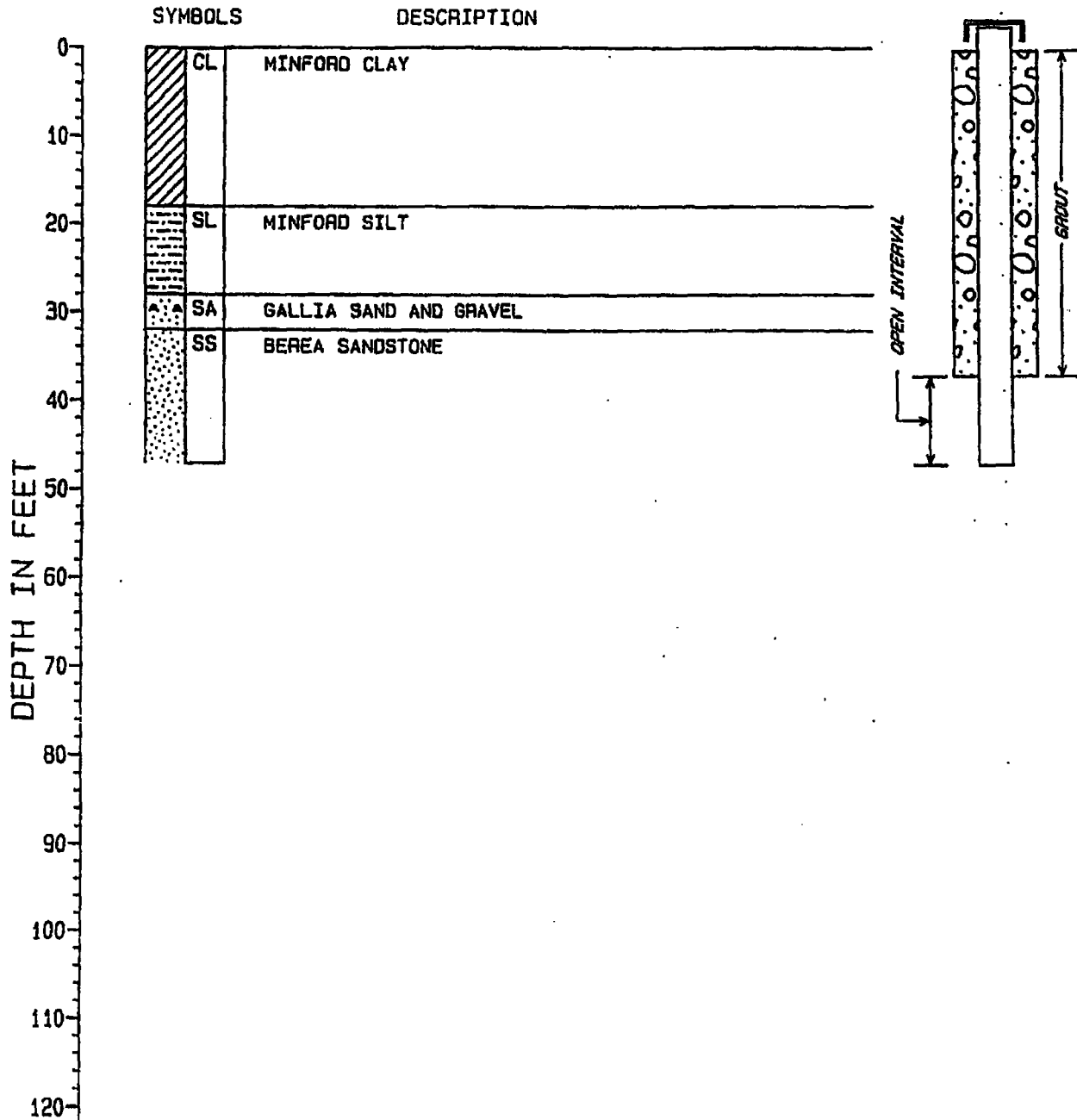
PORTS
PIKETON, OHIO

DATE DRILLED: 9/12/88

SURFACE ELEVATION: 675.72 ft. msl

TOP OF
CASING ELEVATION: 678.38 ft. msl

TOTAL DEPTH: 47.0ft. msl



WELL LOG

Geraghty & Miller Inc.

APPENDIX B

**X-326 FACILITY CLOSURE PLAN
STANDARD OPERATING PROCEDURES**

SOP #1 – DECONTAMINATION OF TEFLON OR GLASS SAMPLING EQUIPMENT

EQUIPMENT:

_____ Micro solution
_____ Distilled water
_____ Log book
_____ Brush

PROCEDURE:

1. Wash equipment thoroughly with laboratory detergent (micro solution) and distilled water using a brush to remove any particulate matter or surface film, if required.
2. Rinse equipment thoroughly with isopropanol or an appropriate solvent.
3. Rinse equipment thoroughly with distilled water and allow to air dry as long as possible.
4. Wrap equipment with plastic to prevent contamination during long-term storage.
5. Record date, time and details of decontamination in log book.

SUBMISSION DATE: SEPTEMBER 13, 2010

SOP#2 – DECONTAMINATION OF STAINLESS STEEL OR METAL SAMPLING EQUIPMENT

EQUIPMENT:

_____ Distilled water
_____ Brush
_____ Log book
_____ Micro solution

PROCEDURE:

1. Wash equipment thoroughly with laboratory detergent (micro solution) and distilled water using a brush to remove any particulate matter or surface film, if required.
2. Rinse equipment thoroughly with isopropanol or an appropriate solvent.
3. Rinse equipment thoroughly with distilled water and allow to air dry as long as possible.
4. Wrap equipment with plastic to prevent contamination during long term storage.
5. Record date, time and details of decontamination in log book.

SOP #3 – COLLECTION OF HAND-AUGERED SOIL/SEDIMENT SAMPLES

EQUIPMENT:

_____ Personal protective equipment
_____ Plastic Sheeting
_____ "Caution" tape and posts
_____ Stainless Steel Hand-Auger
_____ Log Book
_____ Paperwork
_____ Pens/Markers
_____ Sample bottles
_____ Waste containers

PROCEDURES:

Prior to Leaving Office:

A. Acquire necessary equipment and forms.

At Sampling Location:

1. Don appropriate PPE (See Health and Safety Plan).
2. Establish exclusion zone with barricade tape.
3. Set up monitoring equipment (PID and radiation meter).
4. Place plastic sheeting near work area.
5. Using stainless steel hand auger, collect soil or sediment samples from locations and depths prescribed in the Closure Plan.
6. Record all details of sample collection in log book.
7. Collect samples into appropriate bottles. Label each bottle with the following information: date, time of sampling, sample ID, analytical method, sampler initials and method of preservation. Print all information accurately and legibly. Complete chain-of-custody forms (see SOP #6).
8. Place samples in containers as needed, and pack with ice in coolers as soon as possible.
9. Label all waste drum(s) (see SOP #8).
10. Decontaminate the hand auger as outlined in SOP #2.

SUBMISSION DATE: SEPTEMBER 13, 2010

SOP #4 – RINSEATE BLANK COLLECTION

EQUIPMENT:

_____ Distilled water
_____ Sample containers
_____ Log book

PROCEDURE – Re-Use Equipment:

1. Decontaminate equipment according to SOP #1 or #2.
2. Following the final distilled water rinse, again rinse the sampling device with distilled water this time washing the rinseate into sample containers for laboratory analysis.
3. All rinseate blanks must be handled and analyzed in the same manner as investigative samples. (See SOP #6 for Chain-of-Custody and Sample Shipment Procedures.) Record details of rinseate blank collection in the log book.

QA/QC REQUIREMENTS:

One rinseate blank per ten investigative samples must be collected by the sampling team.

SOP #5 – DUPLICATE SAMPLE COLLECTION

EQUIPMENT:

_____ Sample containers
_____ Log book

PROCEDURE:

1. Immediately following sample collection, fill a second set of sample containers using the same order of sample collection and procedures.
2. Label the sample with its duplicate sample ID.
3. All duplicate samples should be handled and analyzed in the same manner as investigative samples. (See SOP #6 for Chain-of-Custody and Sample Shipment Procedures.) Record details of duplicate sample collection in the log book.

QA/QC REQUIREMENTS:

One duplicate sample per ten investigative samples must be collected by the sampling team.

SUBMISSION DATE: SEPTEMBER 13, 2010

SOP #6 – CHAIN-OF-CUSTODY SAMPLE SHIPMENT PROCEDURE

PROCEDURE:

A chain-of-custody record must be completed for all samples immediately upon collection. Information to be provided on this form includes:

- Sample container volume;
- Project number and ID;
- Laboratory identification;
- Sampling personnel;
- Sample identification;
- Sample container material;
- Sample preservation;
- Date and time of collection;
- Type of analysis to be performed;
- Analytical method number; and
- Shipment method and carrier.

All samples should be packed in coolers with sufficient packaging to prevent damage to sample bottles during shipment. Frozen ice packs must be included in each sample cooler. Once the container is ready for shipment, a Chain-of-Custody seal should be applied in such a manner so as to monitor tampering.

Upon change of possession, the record is to be signed and dated by both parties. The white (original) copy accompanies the shipment.

SOP #7 – COMPLETION OF REQUEST FOR DISPOSAL (RFD) FORMS

PROCEDURE:

1. After completing work or when drum is full, fill out RFD form items 1-2.
2. Mark RFD number on drum. If more than one drum will be accounted for on each RFD, mark the drums (i.e., 1 or 2 of 3) to ensure that all drums on each RFD form as handled.
3. Deliver all completed RFD forms to the designated waste management personnel.

SOP #8 – HNU PHOTOIONIZATION DETECTOR PROCEDURE

EQUIPMENT:

_____ HNU Model P1 101 (10.2 eV lamp)
_____ Calibrant Gases (Isobutylene:20-200 ppm and 0-20 ppm)
_____ HNU Calibration Log
_____ Flow Meter
_____ Paperwork

PROCEDURES:

INSTRUMENT SET-UP:

1. Prior to calibration, check the function switch on the control panel to make sure it is in the OFF position. The probe nozzle is stored inside the instrument cover. Remove cover plate by pulling up on the pins that fasten the cover plate.
2. Remove the nozzle from the cover. Assemble probe by screwing nozzle into casing.
3. Attach probe cable to instrument box inserting 12 pin interface connector of the probe cable into the connector on the instrument panel. Match the alignment keys and insert connector. Turn connector in clockwise direction until a distinct snap and lock is felt.
4. Turn the function switch to the Battery Check position. When the battery is charged, the needle should read within or above the green battery arc on the scale plate. If the needle is below the green arc or the red LED light comes on, the instrument should be recharged prior to making any measurements.
5. Turn the function switch to the ON position. In this position, the UV light source should be on. To verify, gaze at the end of the probe for a purple glow. Do Not Look Directly at the Lamp Itself. If the lamp does not come on refer to the Instruction Manual.
6. To zero the instrument, turn the function switch to the standby position and rotate the zero potentiometer until the meter reads zero. Clockwise rotation of the zero potentiometer produces an upscale deflection while counter clockwise rotation yields a down scale deflection. (Note – No zero gas is needed since this is an electronic zero adjustment.) If the span adjustment is changed during instrument calibration, the zero should be rechecked and adjusted. If necessary, wait 15 to 20 seconds to ensure that the zero reading is stable. Readjust as necessary.

INSTRUMENT DAILY CALIBRATION

1. Insert one end of the T tube into probe. Insert second end of probe into calibration gas in the 20-200 ppm range. The third end of probe should have the rotameter (bubble meter) attached.
2. Set the Function switch in the 0-200 ppm range. Crack the valve on the pressured calibration gas container until a slight flow is indicated on the rotameter. The instrument will draw in the volume required for detection with the rotameter indicating excess flow.
3. Adjust the span potentiometer so that the instrument is reading the exact value of the calibration gas. (Calibration gas value is labeled on the cylinder.)
4. Turn instrument switch to the standby position and check the electronic zero. Reset zero potentiometer as necessary following step 6 above.
5. Record on field-data sheet all original and readjusted settings.
6. Set the function switch to 0-20 ppm Remove the mid-range (20-200 ppm) calibration gas cylinder as described above.

SOP #8 (CONT.)

7. Do not adjust the span potentiometer. The observed reading should be ± 3 ppm of the concentration specified for the low range calibration gas. If this is not the case, recalibrate the mid range scale repeating Step 1 thru 6 above. If the low range reading consistently falls outside the recommended tolerance range, the probe light source window likely needs cleaning. Clean window according to instruction manual. When the observed readings are within the required tolerances, the instrument is fully calibrated.

INSTRUMENT CALIBRATION CHECK:

1. Exit the exclusion zone and turn meter to "ON" position. Check that the meter is reading a value of zero.
2. Insert one end of T-tube into probe and other end into calibration gas. The third end of the T-tube should be attached to a flow meter.
3. Crack the valve on the calibration gas and read the value shown by the instrument. Record the value and calibrant gas concentration and a field-data sheet.
4. If the value shown by the instrument is greater than $\pm 20\%$ of the calibration gas concentration, take meter outside of exclusion zone and recalibrate as outlined above.

SAMPLE MEASUREMENT:

1. Place function switch in 0-20 ppm range for field monitoring. This will allow for most sensitive, quick response in detecting airborne contaminants.
2. Before entering a contaminated area, determine background concentration. This concentration should be used as a reference to readings made in the contaminated area. Under no circumstance should one attempt to adjust the zero or span adjustments while the instrument is being operated in the field.
3. Take measurements in contaminated area, recording readings and locations. Should readings exceed the 0-20 scale, switch the function switch to the 0-200 or 0-2,000 range as appropriate to receive a direct reading. Return the instrument switch to the 0-20 range when readings are reduced to that level. Record measurements on field-data sheet.

Note: The instrument will not function properly in high humidity or when the window to the light housing is dirty. If the instrument response is erratic or lower than expected, recalibrate or obtain a different meter and calibrate as outlined above.

4. When finished, reverse Steps 1 thru 6 in Instrument Setup section to shut down the instrument.

QA/QC Requirements:

The instrument must undergo a 2-point calibration as described above every morning before commencement of field work. In addition, a calibration check must be performed every hour during use of the instrument. The readings from the HNU will only be used in selection of proper PPE during field work and in selecting initial field-GC analytical parameters for sample analysis in the field.

REFERENCE: Modified from TSAI, U.S.EPA Region V, QAS.

SUBMISSION DATE: SEPTEMBER 13, 2010

SOP #9 – COMBUSTIBLE GAS INDICATOR (MSA EXPLOSIMETERS – MODEL 2A)

EQUIPMENT:

_____ Calibrant Gasses (40% LEL (Methane 2%) and 50% LEL (Methane 2.5%))

PROCEDURES:

INSTRUMENT SET-UP:

The MSA Explosimeter is set in its proper operating condition by the adjustment of a single control. This control is rheostat regulating the current to the Explosimeter measuring circuit. The rheostat knob is held in the "OFF" position by a locking bar. This bar must be lifted before the knob can be turned from the "OFF" position.

1. Lift the end of the rheostat knob "On-Off" bar and turn the rheostat knob one quarter turn clockwise.

This operation closes the battery circuit (there will be an initial deflection of the meter pointer). The meter pointer may move rapidly upscale and then return to a point below ZERO, or drop directly below ZERO.

2. Flush fresh air through the instrument.

The circuit of the instrument must be balanced with air free of combustible gases or vapors. Five squeezes of the aspirator bulb are sufficient to flush the combustion chamber. If a sampling line is used, an additional two squeezes will be required for each ten feet of line.

3. Adjust rheostat knob until meter point rests at zero.

Clockwise rotation of the rheostat knob causes the meter pointer to move up scale. A clockwise rotation sufficient to move the meter pointer considerably above zero should be avoided as this subjects the detector filament to an excessive current which may shorten its life.

Note:

When the meter pointer remains below zero and cannot be brought up to ZERO even when the control rheostat is turned to its extreme clockwise position, the batteries must be replaced.

If the pointer of the indicating meter moves to the extreme right side of its scale when the instrument is turned on and cannot be adjusted to ZERO, the detector filament may be burned out and should be replaced.

INSTRUMENT USAGE:

1. Readjust meter pointer to zero, if necessary, by turning rheostat knob.
2. Aspirate sample through instrument until highest reading is obtained.

SOP #9 (CONT.)

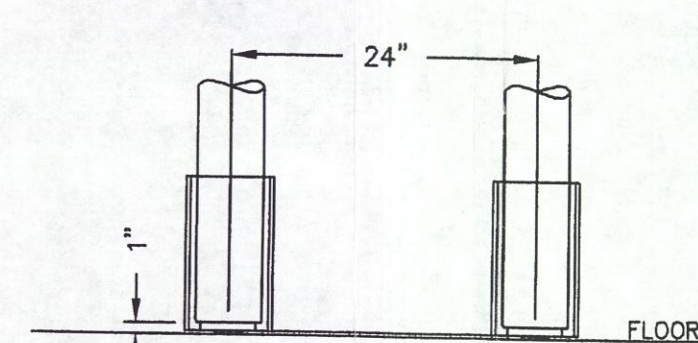
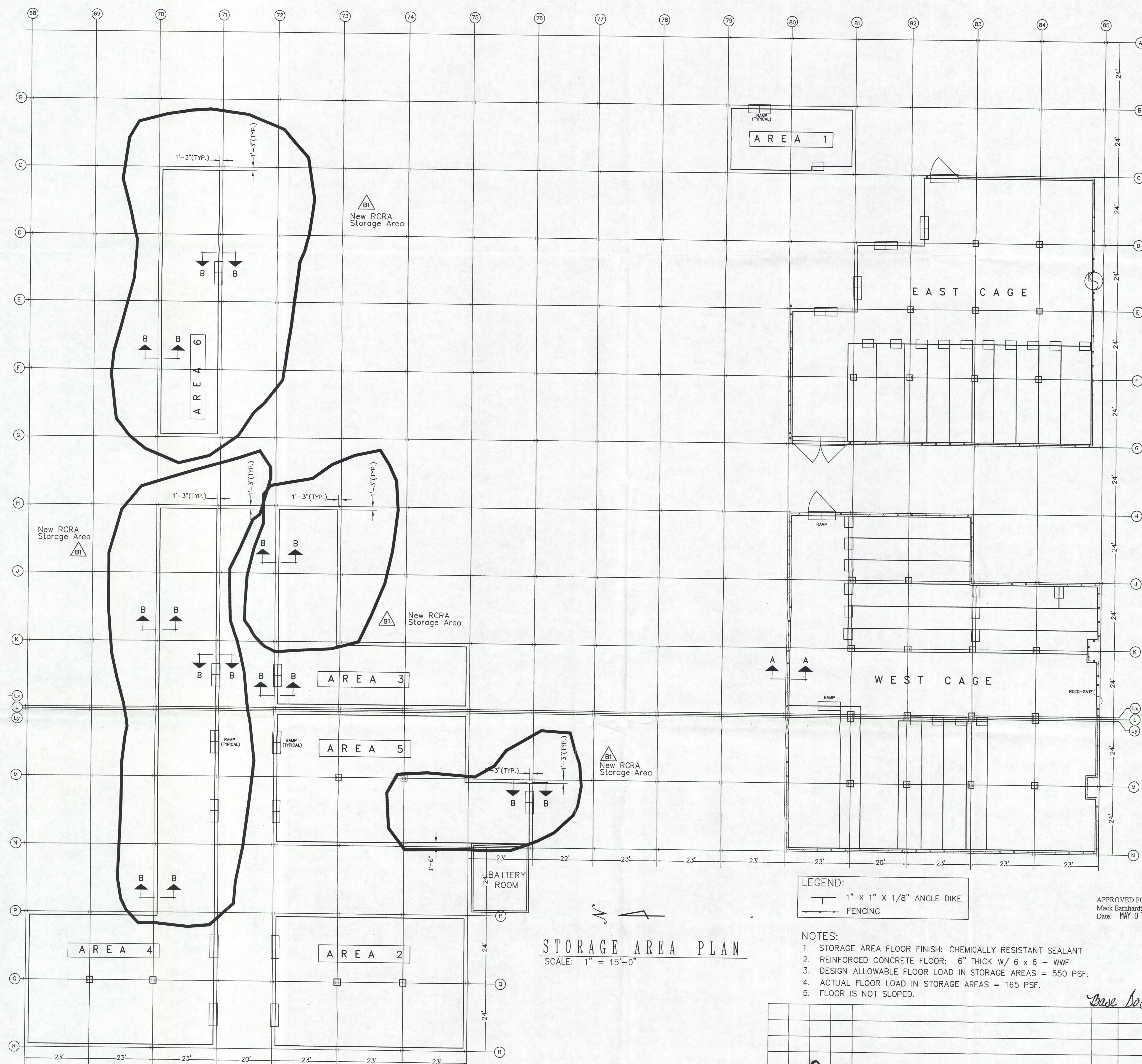
Approximately five squeezes of the bulb are sufficient to give maximum deflection. If a sampling line is used add two squeezes for each ten feet of line. This reading indicates the concentration of combustible gases or vapors in the sample.

INSTRUMENT DAILY CALIBRATION:

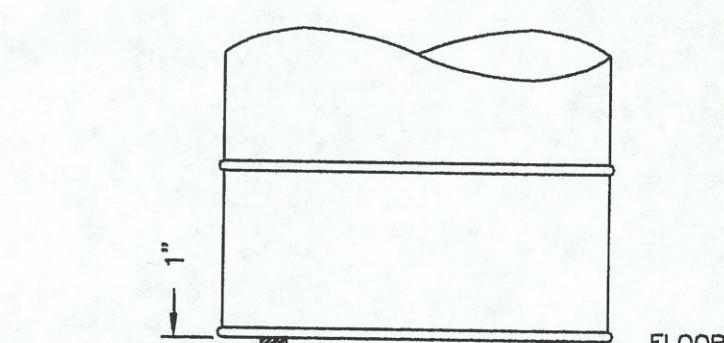
1. Attach the flow control to the calibration gas tank.
2. Connect the hose to the flow control and to the instrument inlet fitting.
3. Open the flow control valve.
4. Record the meter reading after it stabilizes. NOTE: It is not necessary to operate the aspirator bulb to obtain the calibration sample. Depending on which calibration gas is used, the instrument reading should be within one of the following ranges:

2.0% Methane: 42% to 60%

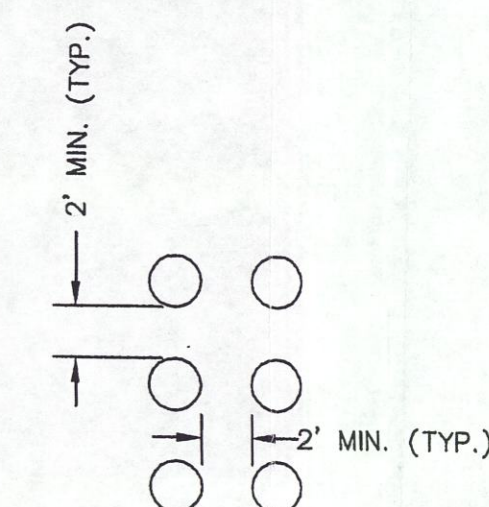
2.5% Methane: 54% to 75%



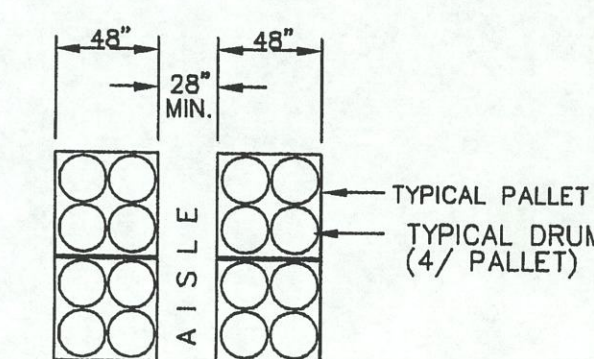
TYPICAL 5" CAN/10 LITER BOTTLE
STORAGE CONFIGURATION
(ELEVATION)
SCALE: NONE



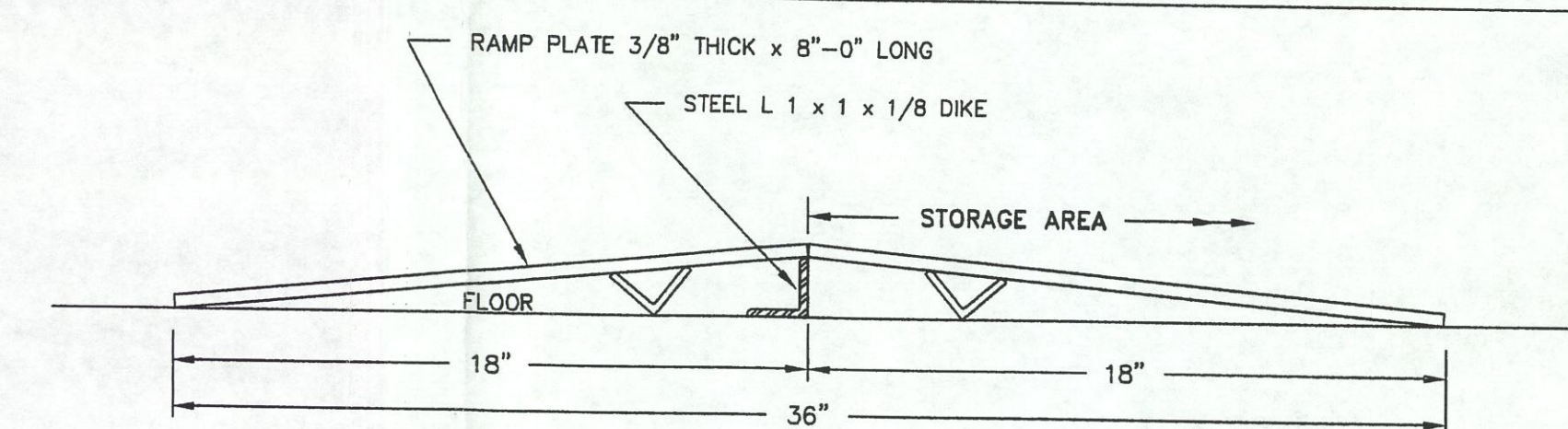
TYPICAL RAISED DRUM DETAIL
(ELEVATION)
SCALE: NONE



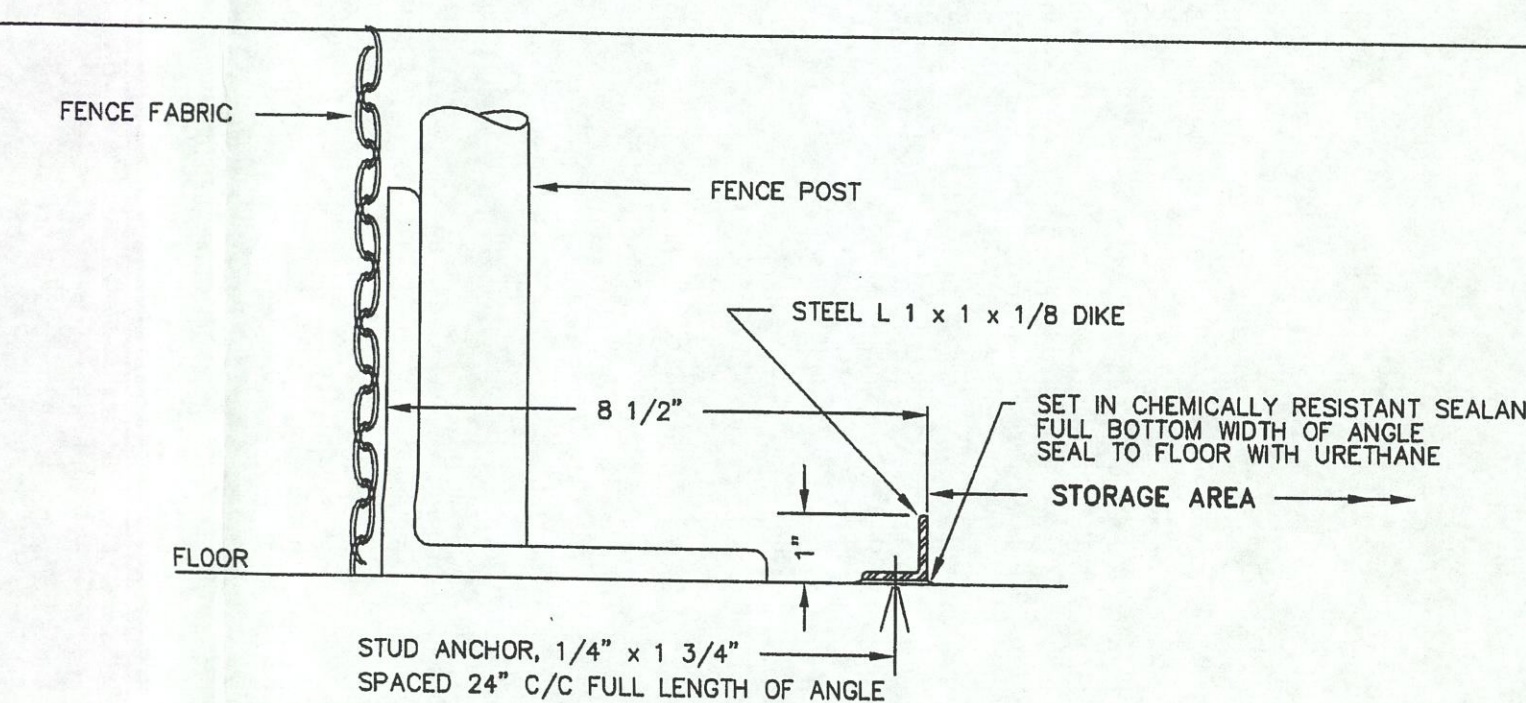
TYPICAL DRUM
STORAGE CONFIGURATION
(PLAN VIEW)
SCALE: NONE



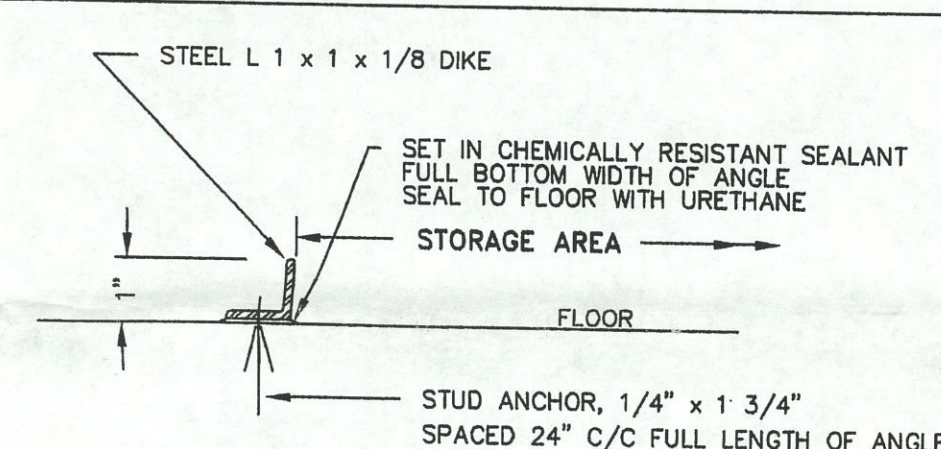
DRUMS STORED MAXIMUM 1 HIGH
TYPICAL DRUM ON PALLET
STORAGE CONFIGURATION
(PLAN VIEW)
SCALE: NONE



TYPICAL RAMP CONFIGURATION
FOR AREAS 1, 2, 3, 4 & "L" CAGE
SCALE: NONE

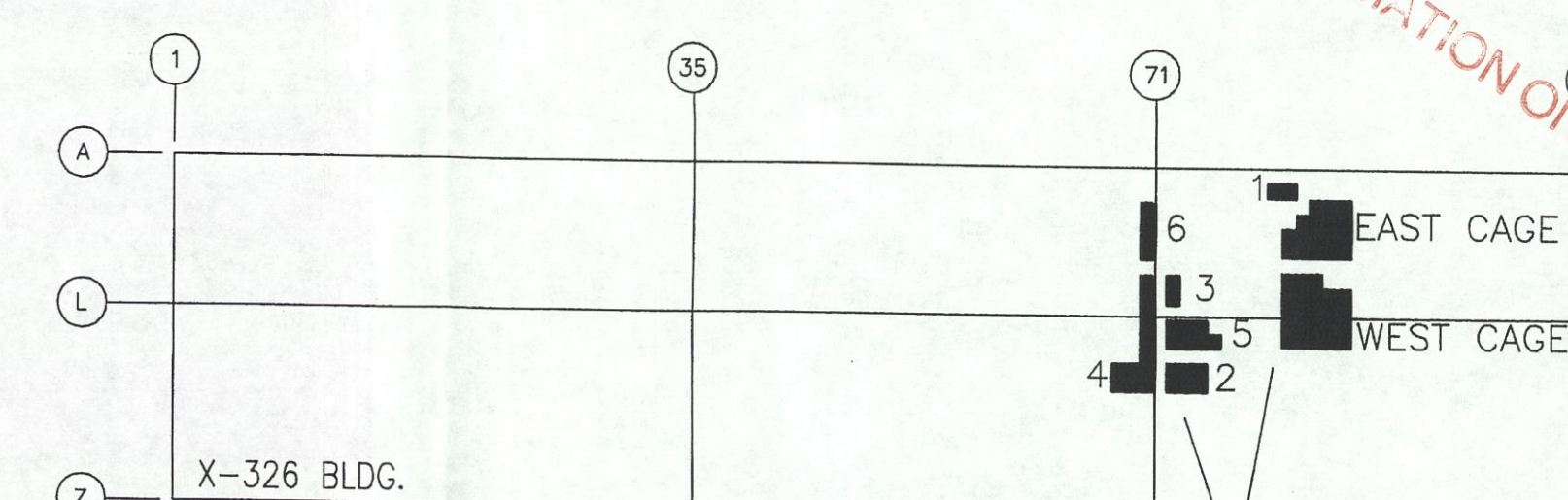


SECTION A - A
(TYPICAL SECTION THROUGH DIKE & FENCING)
SCALE: NONE



SECTION B - B
(TYPICAL SECTION THROUGH DIKE)
SCALE: NONE

APPROVED FOR RELEASE
H. H. Thomas



KEY PLAN
SCALE: NONE

71 INFORMATION ONLY 102

RCRA STORAGE AREAS
SEE DRAWING DX-761-997A

AUTOCAD

UNITED STATES DEPARTMENT OF ENERGY

MARTIN MARIETTA MARTIN MARIETTA ENERGY SYSTEMS, INC.

P.O. BOX 628 PIKETON, OHIO 45661
ACTING UNDER CONTRACT DE-AC05-76OR00001 WITH THE U.S. DEPARTMENT OF ENERGY

PROJECT	STORAGE AREA EXPANSION
SUBPROJECT	RCRA PART B PERMIT REVISION

X-326 BUILDING
RCRA STORAGE AREAS

SCALE
1"=15'-0" U.N.O.

DWG NO
DX-761-997A

REV
B1

LEGEND:

1" X 1" X 1/8" ANGLE DIKE
FENCING

NOTES:

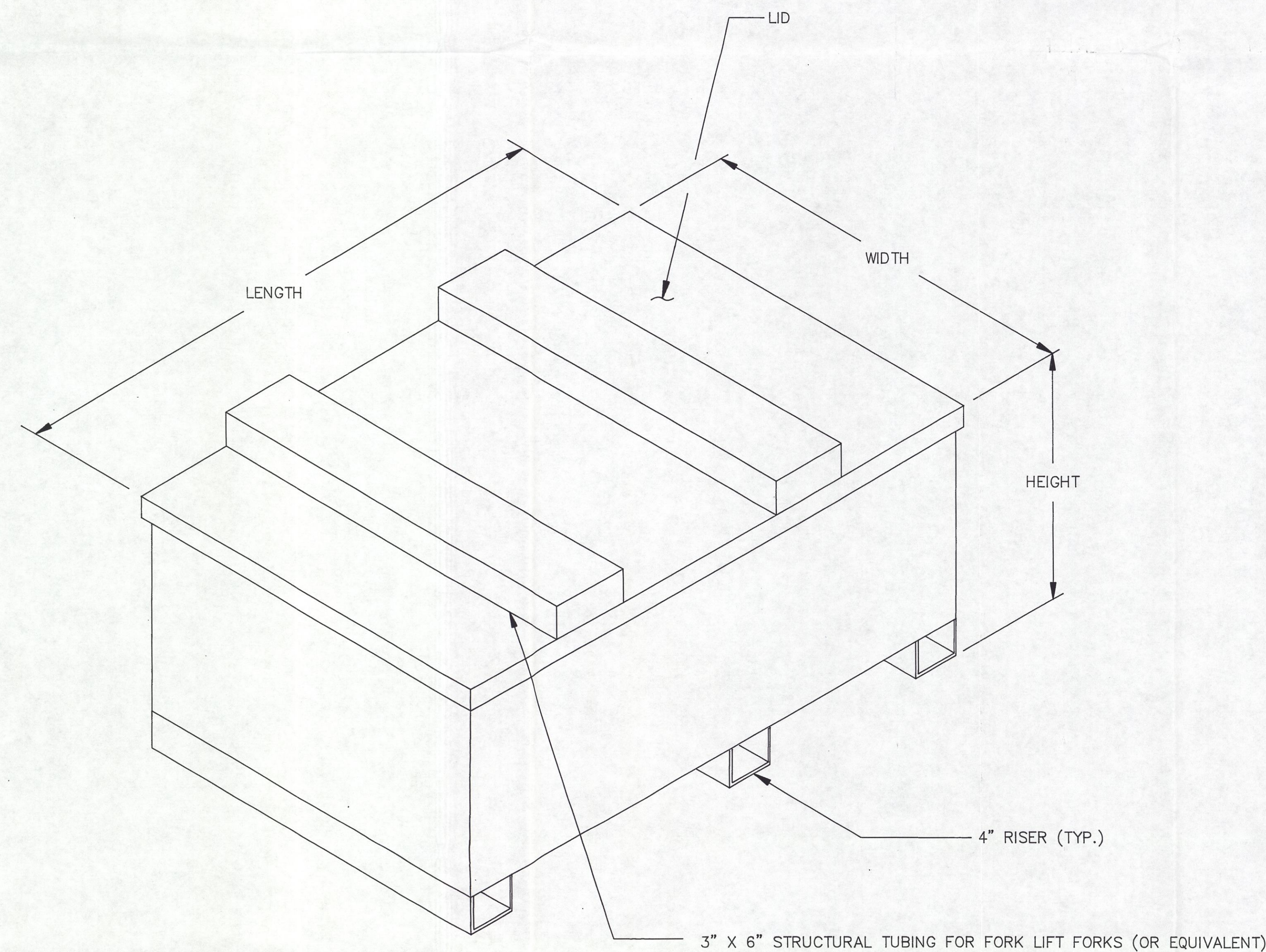
1. STORAGE AREA FLOOR FINISH: CHEMICALLY RESISTANT SEALANT
2. REINFORCED CONCRETE FLOOR: 6" THICK W/ 6 x 6 - WWF
3. DESIGN ALLOWABLE FLOOR LOAD IN STORAGE AREAS = 550 PSF
4. ACTUAL FLOOR LOAD IN STORAGE AREAS = 165 PSF.
5. FLOOR IS NOT SLOPED.

APPROVED FOR RELEASE
Mack Earnhardt
Date: MAY 07 2010

Base Document- Rev 2

				Base Document						
B1	DR	NO		CFC FOR LPP PROJECT 04-66-0680						
X	CR	DB		REVISED NOTES 2, 3, & 4.						
X	CR	CR		ADDED EAST PAGE, REVISED AREA DESIGNATIONS						
X	CR	DB		APPROVED FOR RELEASE						
REV	DWN	ENG	SUPV	DESCRIPTION				DOE	MM-ES	DATE
				REVISION: DB-1516, DUBOIS				CORRECTOR: AUSTIN		

					AUTOCAD
172-0					
	APPROVALS	DATE	UNITED STATES DEPARTMENT OF ENERGY		
	G. RANSOM DRAWN	5/23/91			
	D. O'DELL CHECKED	5/23/91	MARTIN MARIETTA MARTIN MARIETTA ENERGY SYSTEMS, INC.		
	D. O'DELL ENG	5/23/91	P.O. BOX 628 PIKETON, OHIO 45661 <small>ACTING UNDER CONTRACT DE-AC05-76OR00001 WITH THE U.S. DEPARTMENT OF ENERGY</small>		
b6	L. Rhoads SUPV	10/24/91	PROJECT STORAGE AREA EXPANSION		
	N/A MM-ES		SUBPROJECT RCRA PART B PERMIT REVISION		
			TITLE		
			X-326 BUILDING RCRA STORAGE AREAS		
	N/A		SCALE	DWG NO	REV
			1"=15'-0" U.N.O.	DX-761-997A	B



HAZARDOUS OR MIXED WASTE
STORAGE CONTAINER

DIMENSIONS	INTERIOR	EXTERIOR
HEIGHT	47± 2"	51± 2"
WIDTH	46± 2"	46± 2"
LENGTH	72± 2"	72± 2"

DESCRIPTION

- | | |
|----------------|---|
| CLASSIFICATION | - STRONG TIGHT CONTAINER |
| CAPACITY | - 90 CU. FT. MINIMUM |
| MATERIAL | - 12 GAUGE MIN. LOW CARBON HOT ROLLED STEEL |
| LID | - COMPATABLE WITH CONTAINER. MUST SUPPORT PAYLOAD & STACKABILITY REQUIREMENTS. LID MUST BE SEALABLE WITH TAMPER RESISTANT SEAL TO SHOW IF CONTAINER HAS BEEN OPENED. REMOVABLE (NO HINGES). SEAL OF BOLTS, HASPS, OR SIMILAR LOCKING DEVICES REQUIRED. LID MUST BE ABLE TO BE LIFTED OFF BY USE OF FORK LIFT FORKS. |
| PAYLOAD | - 8000 LBS. |
| STACKABLE | - 4 HIGH (SELF SUPPORTING - FULLY LOADED) |
| PAINTING | - GOVERNMENT WITNESSED VENDOR TESTS REQUIRED. |
| COLOR | - ONE PRIME COAT OF GRAY RUST INHIBITIVE PRIMER & ONE FINISH COAT ALKYD ENAMEL (INTERIOR & EXTERIOR). |
| LINER | - BRILLIANT BLUE #60 PER STEEL SHIPPING CONTAINER INSTITUTE. |
| WELDING | - 10 MIL POLYETHYLENE LINER REQUIRED INSIDE EACH CONTAINER. LINER SEAMS SHALL BE THERMALLY SEALED. LINER MUST BE LARGE ENOUGH TO COVER ENTIRE INTERIOR AREA AND STILL BE THERMALLY SEALABLE WHEN FULL. |
| | - ALL WELDING SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) D1.3 - STRUCTURAL WELDING CODE FOR SHEET STEEL. |
| | - WELDERS MUST BE CERTIFIED IN ACCORDANCE WITH ASME SECTION IX. ALL INTERIOR WELDS SHALL BE WATERTIGHT. |

CONTAINER MUST MEET CFR TITLE 49 PART 173.24 REQUIREMENTS FOR STRONG-TIGHT CONTAINER FOR RADIOACTIVE WASTES OF LOW SPECIFIC ACTIVITY (LSA), SHIPPED BY EXCLUSIVE USE TRANSPORT.

INFORMATION ONLY

This document has been reviewed and is UNCLASSIFIED and NOT UCN. This review does not constitute clearance for public release.
[Signature] 6/16/05
Anthony Saraceno
Review Date: 3/25/2000

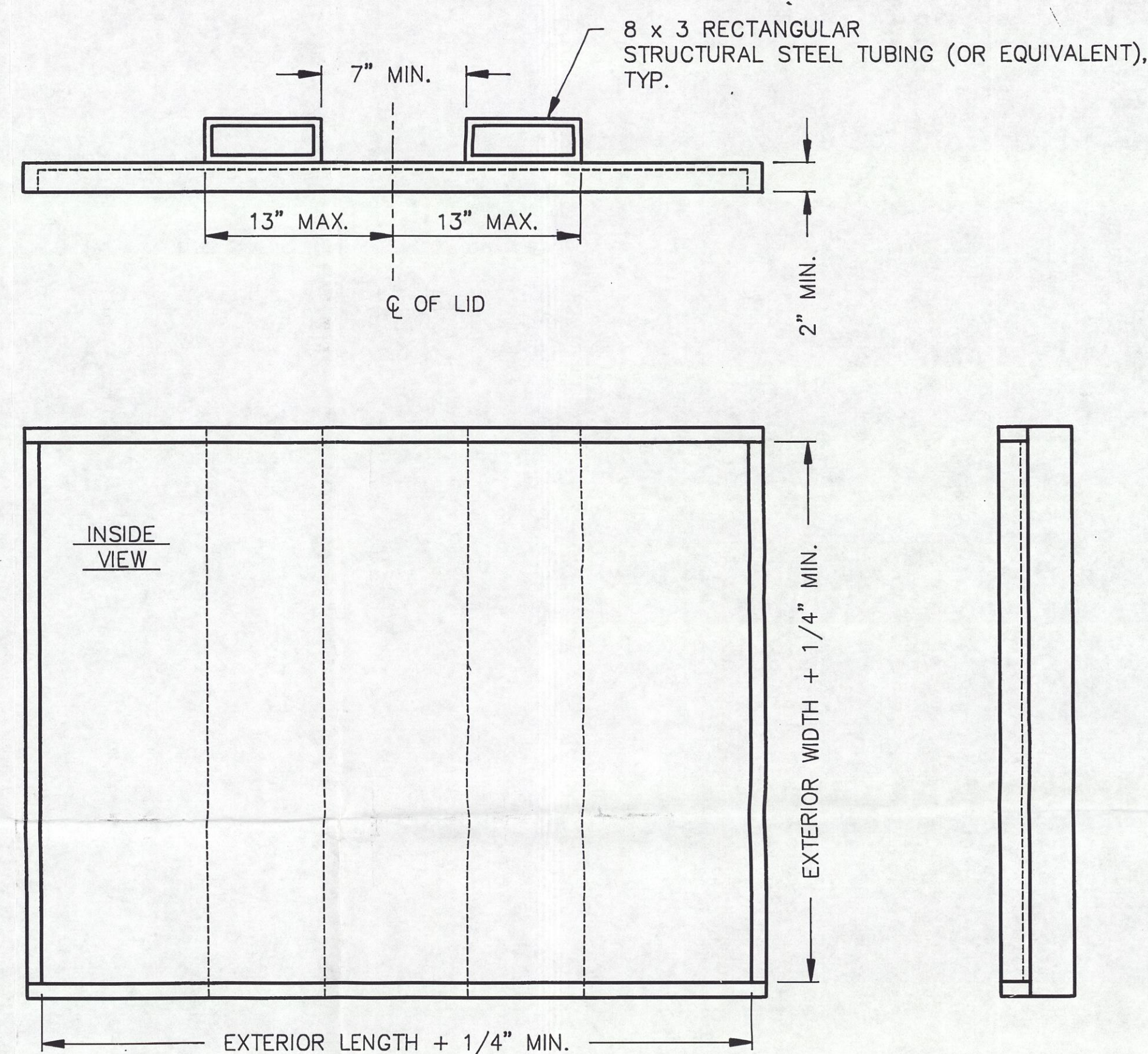
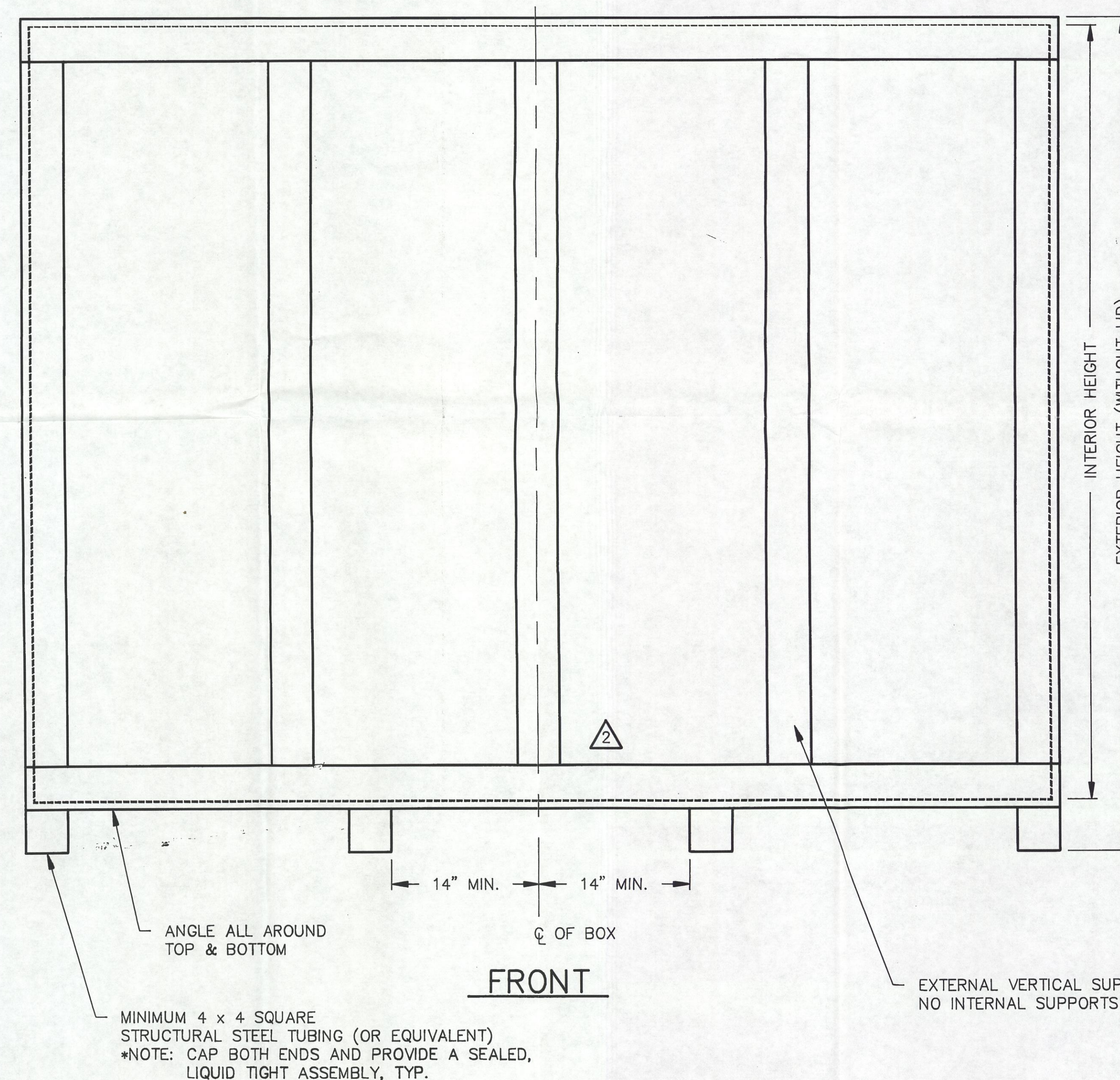
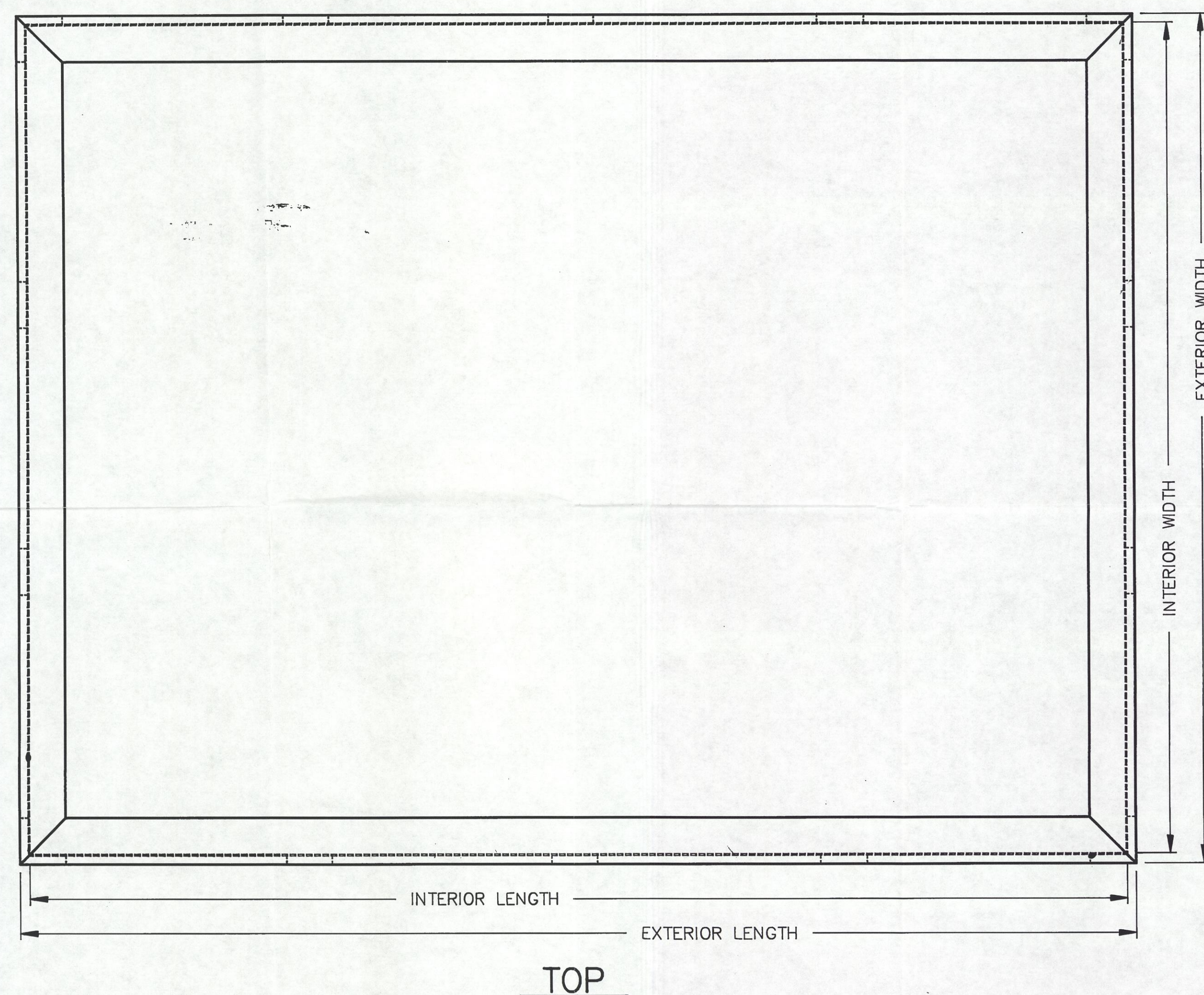
UNCLASSIFIED/NOT UCN
Anthony Saraceno ADC 4052
Review Date: 3/25/2000

Information Contained Within Does Not Contain Export Controlled Information

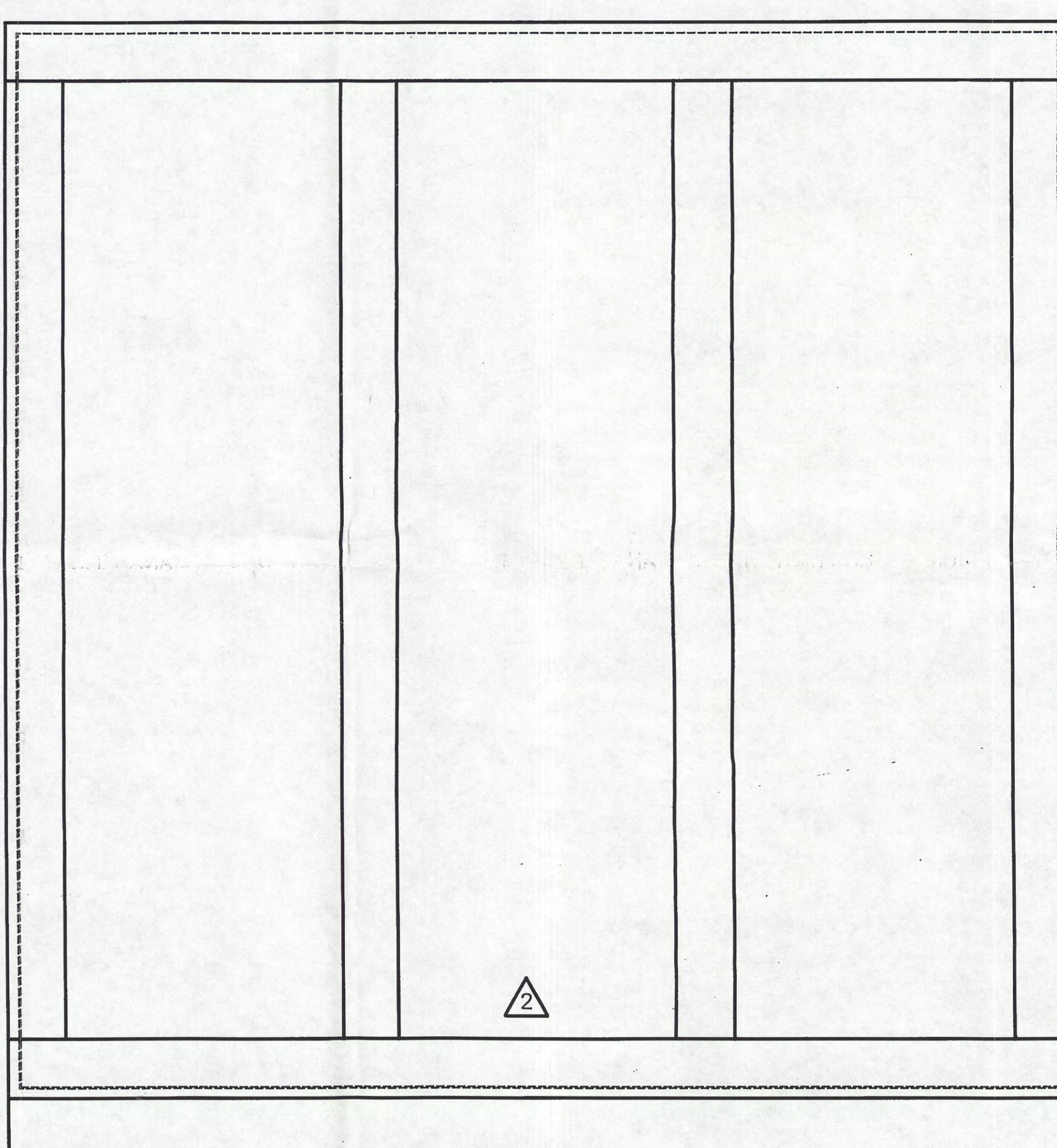
Reviewed *[Signature]*
Date 6-11-05

AUTOCAD

				APPROVALS				DATE	UNITED STATES DEPARTMENT OF ENERGY			
							R.J.D'ANTONI	4/14/89	MARTIN MARIETTA MARTIN MARIETTA ENERGY SYSTEMS, INC.			
							B.E. UPHAM	4/17/89	P.O. BOX 628 PIKETON, OHIO 45661			
							R.J.D'ANTONI	4/17/89	ACTING UNDER CONTRACT DC-ACCS-74680001 WITH THE U.S. DEPARTMENT OF ENERGY			
							ENG		PROJECT PROJECT 10900			
							PC	7/24/81	SUBPROJECT			
							SUPV		TITLE			
							MM-ES		HAZARDOUS OR MIXED WASTE STORAGE CONTAINER			
0	RJD	RJD	LR	CERTIFIED FOR CONSTRUCTION PROJECT 10900				7/21/89				
REV	DWN	ENG	SUPV	DESCRIPTION				DDE	SCALE			
				REVISION OR ISSUE PURPOSE				APPROVED-INITIALS AND DATE	NONE			
								DDE	DX-761-2265-M			
									REV 0			

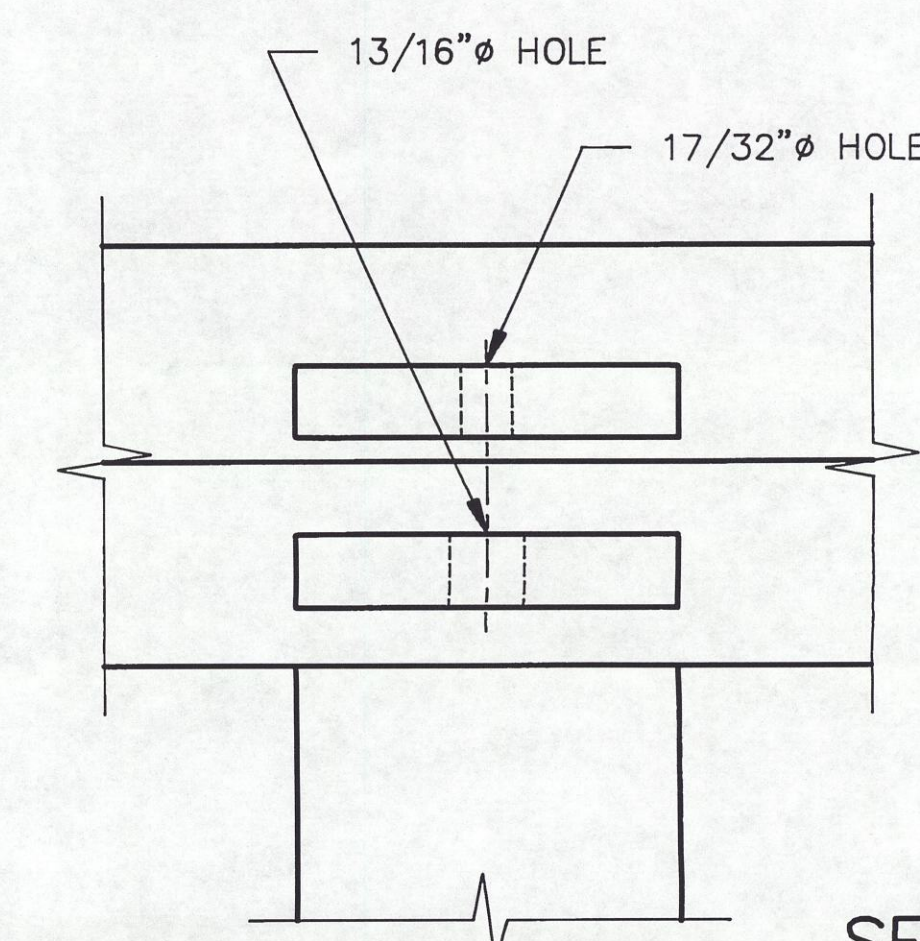


DIMENSIONS	INTERIOR
HEIGHT	72" ±1"
WIDTH	72" ±1"
LENGTH	96" ±1"

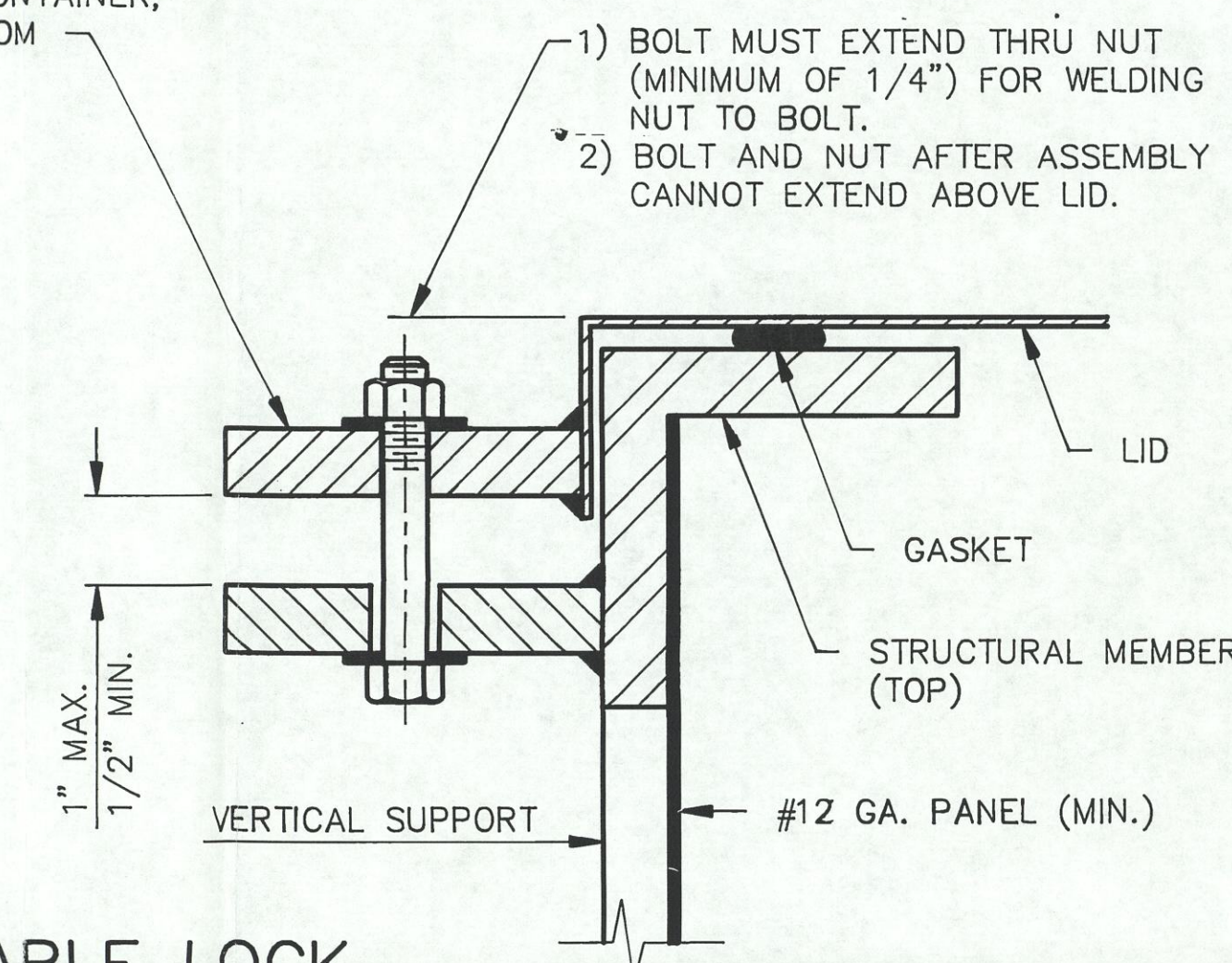


SIDE

1 LUG ATTACHED TO LID AND 1 LUG ATTACHED TO CONTAINER, CONNECTIONS FOR LUGS MUST BE ON TOP AND BOTTOM



SEALABLE LOCK
12 PER CONTAINER MINIMUM
3 PER SIDE MINIMUM
PRINT DETAIL REQUIRED



NOTES:

- DOT - THE CONTAINER SHALL BE 'STRONG TIGHT' PER THE REQUIREMENTS OF 49 CFR 173.24 AND 49 CFR 173.425.
- GENERAL - THIS DRAWING PROVIDES DESIGN REQUIREMENTS AND SPECIFICATIONS, ONLY. THIS DRAWING IS NOT FOR FABRICATION. SHOP FABRICATED STRUCTURAL MEMBERS ARE PERMITTED.
- CAPACITY - 275 CU. FT. MINIMUM.
- MATERIAL - 12 GAGE (MINIMUM) HOT ROLLED CARBON STEEL SHEET PER ASTM A-569 or ASTM A-570 AND STRUCTURAL MEMBERS PER ASTM A-36, OR EQUIVALENTS SUBJECT TO BUYER APPROVAL.
- LID - COMPATIBLE WITH CONTAINER. MUST SUPPORT PAYLOAD AND STACKABILITY REQUIREMENTS. LID MUST BE SEALABLE WITH STEEL BOLTS (MIN. DIAMETER OF 1/2", SAE GRADE #5).

THERE SHALL BE A MINIMUM OF 12 BOLTS, 12 NUTS AND 24 WASHERS PER LID WITH A MINIMUM OF 3 BOLTS ON EACH SIDE. LID SHALL BE TOTALLY REMOVABLE (NO HINGES). LID SHALL BE READILY PICKED UP BY LIFT TRUCK FORKS. LIFTING DEVICES SHALL BE LOCATED SO THEY DO NOT INTERFERE WITH STACKABILITY REQUIREMENTS.
- GASKET - SEAL SHALL BE ACCOMPLISHED BY A GASKET CAPABLE OF SEALING THE LID AND CONTAINER TO PREVENT MOISTURE FROM ENTERING OR EXITING.
- STACKABILITY - BOXES WITH LIDS IN PLACE MUST BE SELF SUPPORTING WHEN STACKED 3 HIGH WITH A NET LOAD OF 16,000 LBS. PER BOX.
- STACK STRENGTH TEST - THE SELLER SHALL STACK BOXES FILLED WITH A NET LOAD OF 16,000 LBS. EACH, THREE HIGH. AFTER THIS TEST THE CONTAINERS SHALL EXHIBIT NO PERMANENT DISTORTION. CERTIFIED TEST RESULTS FROM THE VENDOR ARE REQUIRED.
- SURFACE PREPARATION - CONTAINER SURFACES SHALL BE FREE OF ALL SCALE, RUST, GREASE, OIL, ETC. AND IN CONFORMANCE WITH PAINT MANUFACTURER'S SURFACE PREPARATION REQUIREMENTS PRIOR TO COATING. ALL SURFACES SHALL BE DEGREASED BY AN EMULSIFIER AND DETERGENT POWER WASH (PREFERRED) OR SOLVENT CLEANING PRIOR TO ABRASIVE BLASTING. PROFILE ALL SURFACES BY ABRASIVE BLASTING IN ACCORDANCE WITH SSPC-SP6 COMMERCIAL BLAST CLEANING.
- PAINTING - TWO COAT SYSTEM, HIGH SOLIDS EPOXY MASTIC COATING 5 - 6 MILS D.F.T. EACH COAT, 10 - 12 MILS TOTAL D.F.T. (ON ALL SURFACES, INTERIOR AND EXTERIOR, NO BARE STEEL PERMITTED). SHERWIN WILLIAMS EPOXY MASTIC COATING B 58 SERIES OR AN EQUIVALENT SUBJECT TO BUYER APPROVAL. FINISH COAT COLOR - SAFETY ORANGE, FEDERAL STD. PAINT CHIP #22544. PRIME COAT COLOR SHALL BE DISSIMILAR. ALL TINTING PIGMENTS SHALL BE LEAD-FREE. ALL COATINGS SHALL BE APPLIED IN STRICT CONFORMANCE WITH THE PAINT MANUFACTURER'S SPECIFICATIONS.
- LABEL - 'LOAD CAPACITY - 16,000 LBS.' (EXTERIOR, 'CONTACT WASTE MANAGEMENT BEFORE USE' (2 SIDES) (SIZE: 2" LETTERS)
- PAYLOAD - 16,000 LBS., NET.
- WELDING - ALL WELDING SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) D1.3, LATEST EDITION, WITH THE FOLLOWING EXCEPTIONS:
- NO VISIBLE POROSITY IS PERMITTED.
- MAXIMUM UNDERCUT SHALL BE NO MORE THAN 15% OF THE THICKNESS OF THE THINNEST MEMBER JOINED.
- WELDERS AND WELDING PROCEDURES SHALL BE QUALIFIED ACCORDING TO AWS D1.3, AWS D1.1, OR ASME SECTION IX, LATEST EDITIONS. ALL CERTIFICATIONS SHALL BE APPROVED BY THE BUYER PRIOR TO THE START OF WORK.
- ALL INTERIOR SEAMS AND CORNERS SHALL BE LIQUID LEAK TIGHT. CONTINUOUS WELDS ON THE INTERIOR ARE SUGGESTED.
- VERIFICATION OF WELD INSPECTION IS REQUIRED. INSPECTION BY AWS CERTIFIED WELDING INSPECTOR (CWI) IS SUGGESTED.
- CERTIFICATION - THE MANUFACTURER SHALL CERTIFY IN WRITING THE CONTAINERS HAVE PASSED ALL TESTS AND INSPECTIONS, AND MEET THE REQUIREMENTS OF THIS DRAWING AND 49 CFR 173.425, FOR 'STRONG TIGHT CONTAINERS'.
- DRAWINGS - THE OFFEROR SHALL SUBMIT DETAILED FABRICATION DRAWINGS AND DESIGN CALCULATIONS TO THE BUYER FOR APPROVAL PRIOR TO THE START OF WORK.

Information Contained Within Does Not
Contain Export Controlled Information

Revision: *[Signature]*
Date: 6-11-05

AUTOCAD

UNITED STATES DEPARTMENT OF ENERGY

MARTIN MARIETTA MARTIN MARIETTA ENERGY SYSTEMS, INC.

P.O. BOX 628 PIKETON, OHIO 45661
ACTING UNDER CONTRACT DE-AC05-76OR00015 WITH THE U.S. DEPARTMENT OF ENERGY

PROJECT

SUBPROJECT

TITLE

LARGE STORAGE CONTAINER FOR
DRY, SOLID CONTAMINATED WASTE

SCALE

DX-761-2286-M

REV

3

REV	DWN	ENG	SUPV	DESCRIPTION	DATE	DOE	MM-ES	DATE	DOE
3	GR	GR	LR	REVISED GENERAL, MAT'L, SURFACE PREP & PAINT NOTES.	4/13/02	JR			
2	MTB	PH	LR	REMOVED HOLES & REVISED NOTES	5/14/01	JR			
1	MTB	RJD	PEC	REVISED PAINTING NOTE FROM ALKYD TO EPOXY ENAMEL	2-7-90	PEC			
0	MTB	RJD	LR	APPROVED FOR RELEASE	4-13-89	LR			
				REVISION OR ISSUE PURPOSE					
				APPROVED-INITIALS AND DATE					

UNCLASSIFIED/NOT CONT.
Authority: 48 CFR 101-11.6
Review Date: 3/05/2000

This document has been reviewed and is
classified as UNCLASSIFIED. The review
does not constitute an endorsement or
approval of the information contained
herein.

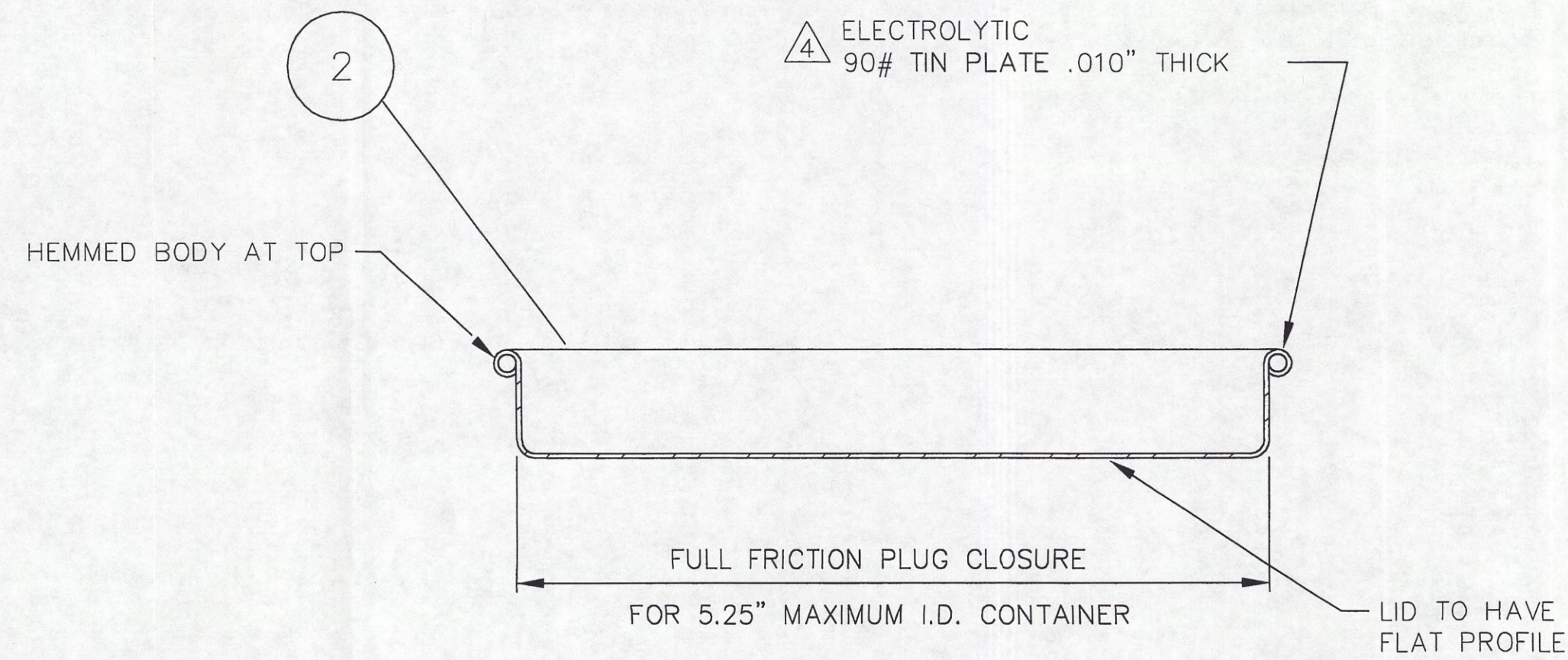
INFORMATION ONLY

Z-W-761-2331-M-Z

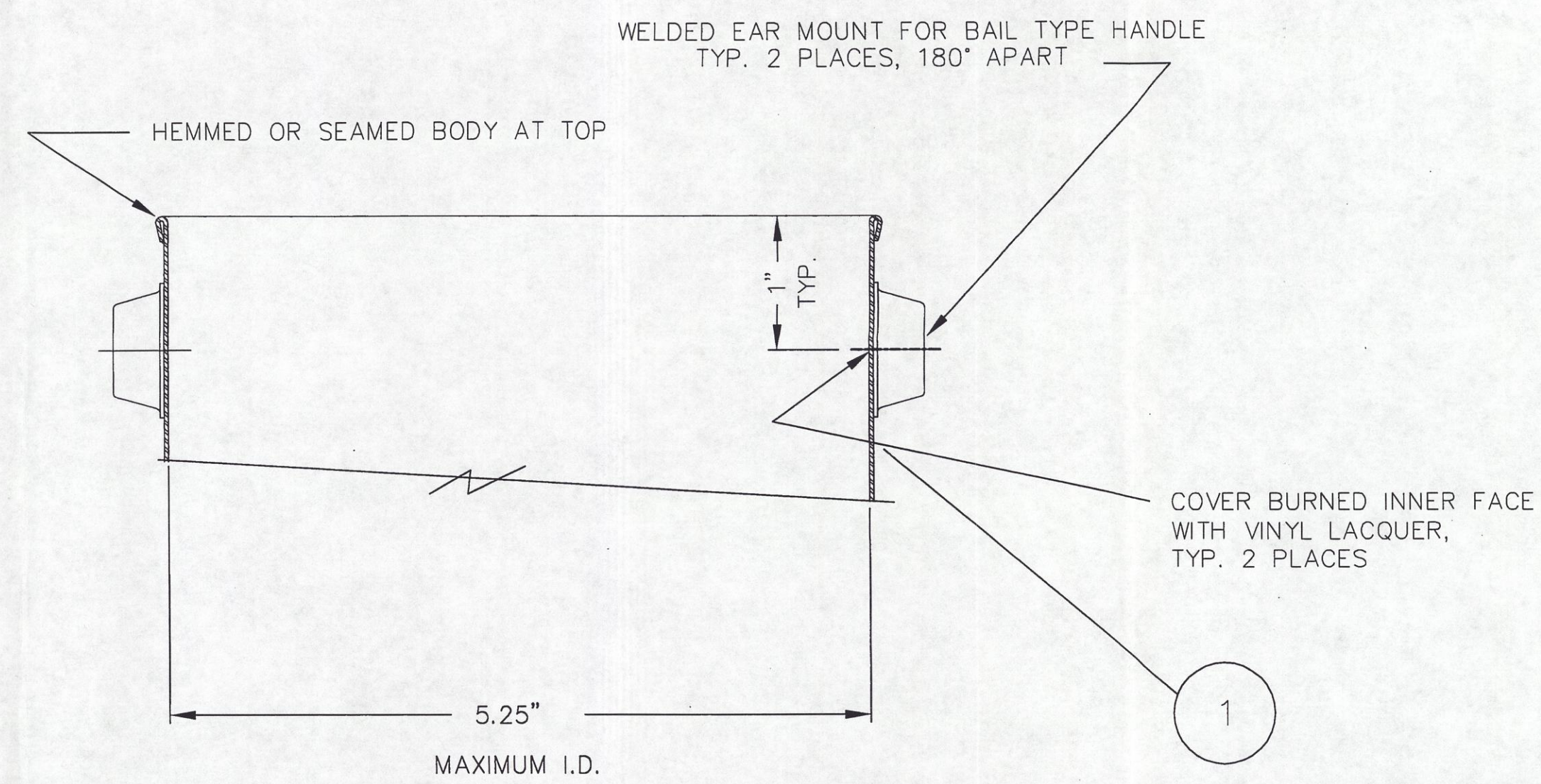
BILL OF MATERIALS

ITEM No.	DESCRIPTION	MATERIAL
1	135 # TIN PLATE CAN WITH BAIL TYPE HANDLE	ELECTROLYTIC, 135# TIN PLATE
2	90 # TIN PLATE FULL FRICTION PLUG CLOSURE LID	ELECTROLYTIC, 90# TIN PLATE

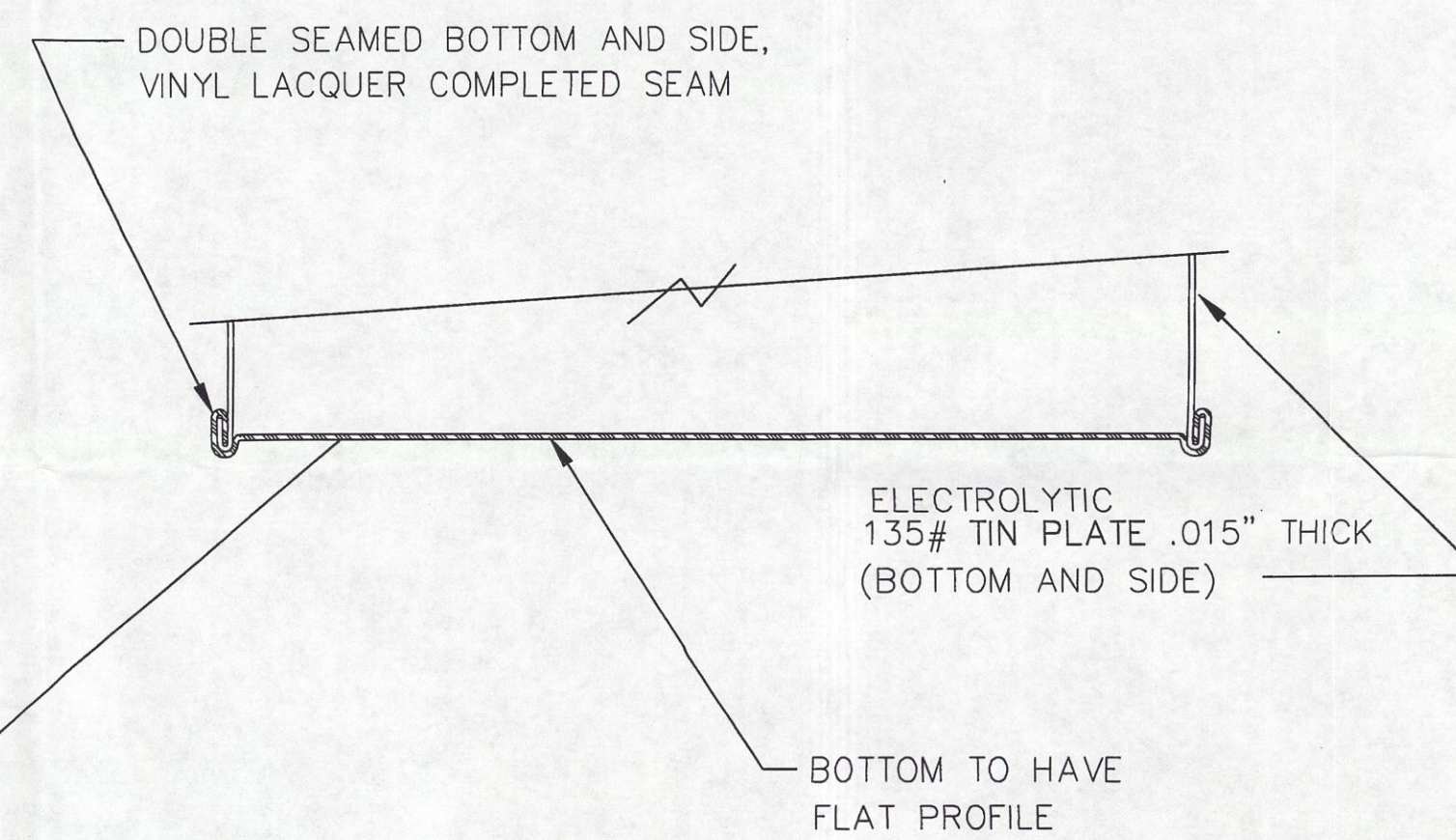
STANDARD BAIL HANDLE (SHAPE OPTIONAL)
HANDLE SHALL CLEAR LID AND REST
AGAINST SIDE OF CAN WHEN IN LOWER
POSITION



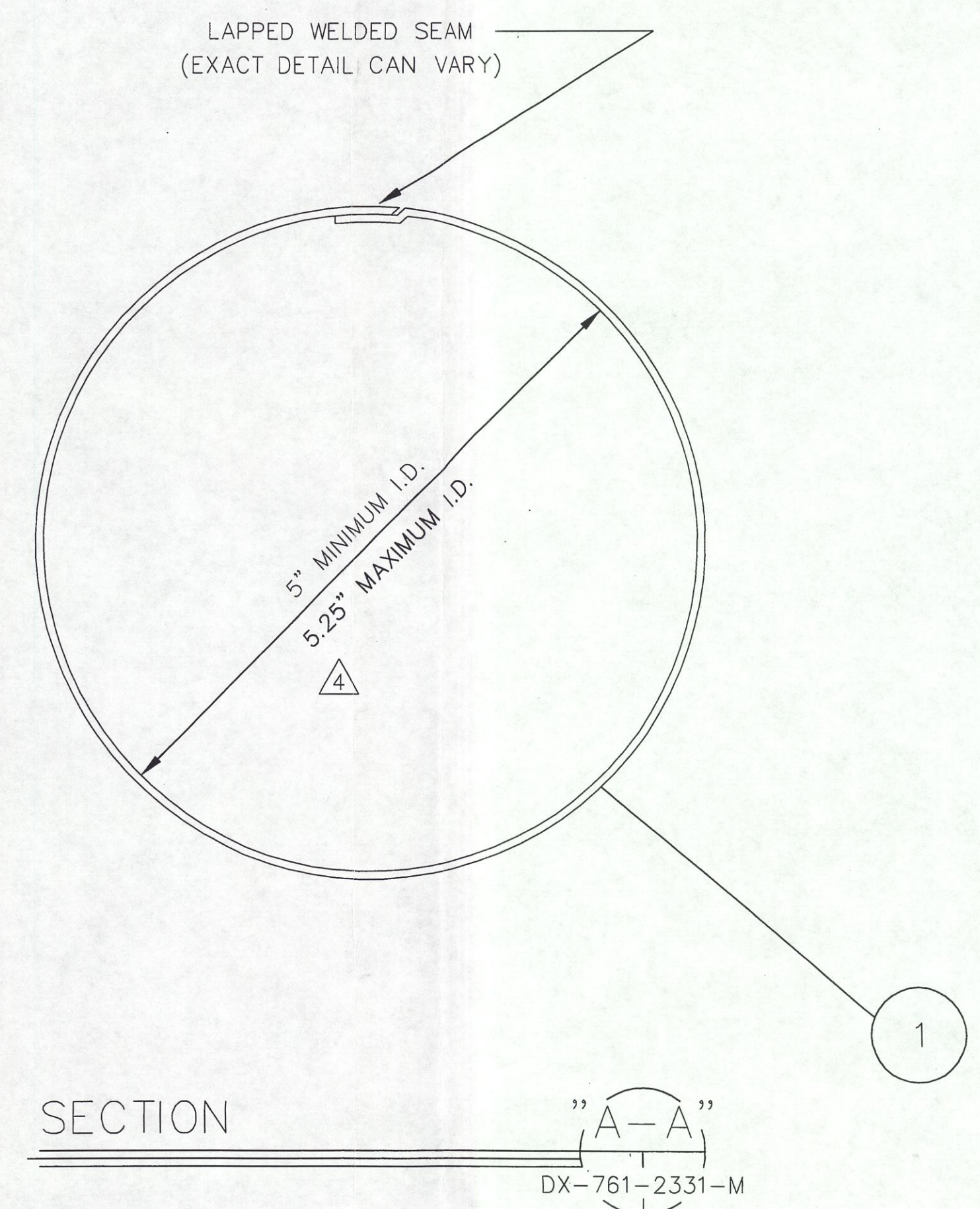
SECTION THRU FRICTION PLUG CLOSURE LID



SECTION THRU TOP OF CAN



SECTION THRU BOTTOM OF CAN



SECTION A-A
DX-761-2331-M

ELECTROLYTIC
135# TIN PLATE
.015" THICK

15" MAXIMUM HEIGHT WITH LID IN PLACE
14 3/4" MINIMUM TOTAL HEIGHT WITH LID IN PLACE

"A-A"
DX-761-2331-M

TIN CONTAINER

DRAWING ON WHICH SECTION OR DETAIL IS TAKEN

SECTION & DETAIL KEY

REFERENCE DRAWINGS	OPEN CHANGES	REVISION 4 CHANGES INCLUDE VARIOUS DRAWING CORRECTIONS	APPROVALS	DATE	SCALE	FACILITY	TITLE	REV
		5 APPROVED FOR RELEASE PER E1874R17	CJM DLG	DW	19/6/00	P.M. RIDGEWAY	08-31-89	UNITED STATES ENRICHMENT CORPORATION
		4 CORRECTIONS/CLARIFICATIONS PER ESO No. E1874R17	CJE DLD	DON WEBER	12-02-99	M.A. SALTZMAN	08-31-89	UNITED STATES ENRICHMENT CORPORATION
		3 CHANGED STORES No. FOR W.R. D0000823	SD EK	DON WEBER	02-17-97	CHECKED	08-31-89	UNITED STATES ENRICHMENT CORPORATION
		2 APPROVED FOR RELEASE PER W.R. No. D0000823	CH EK	DON WEBER	01-21-97	T.C. ADAMS	08-31-89	UNITED STATES ENRICHMENT CORPORATION
		1 DELETED TEFLON COATING NOTE	GR GR	LENARD RHOADS	01-15-93	L.K. MEAD	03-22-90	UNITED STATES ENRICHMENT CORPORATION
		0 APPROVED FOR RELEASE	PMR TCA	L.K. MEAD	03-22-90	DISCIPLINE MANAGER	03-22-90	UNITED STATES ENRICHMENT CORPORATION
REV	DESCRIPTION	DWN ENG	DISC. MGR.	DATE	APPROVALS	DATE		
	REVISION OR ISSUE PURPOSE	INITIALS	APPROVAL		SCALE FULL	FACILITY X-SITE	DWG NO DX-761-2331-M-Z	REV 5

INFORMATION ONLY

Information Contained Within Does Not
Contain Export Controlled Information

This document has been reviewed and is
UNCLASSIFIED and NOT UCN. This review
does not constitute clearance for public release.

UNCLASSIFIED/Not UCN
Date: 12/6/00

AQ-NCS NOTE:

THE "Z" SUFFIX IN THIS DRAWING No. INDICATES THAT THIS
DRAWING HAS A SAFETY FEATURE THAT MAY NOT BE
ALTERED OR CHANGED EITHER FUNCTIONALLY OR PHYSICALLY
WITHOUT AUTHORIZATION FROM CONFIGURATION MANAGEMENT.

THE HIGHLIGHTED LINES INDICATE ENGINEERING DESIGN CONTROLS
SPECIFIED IN NCSA'S AS NECESSARY TO MEET A DOUBLE
CONTINGENCY REQUIREMENT. REFER TO NCSA-PLANT_025, & PLANT_006.

AUTOCAD

UNITED STATES ENRICHMENT CORPORATION
P. O. BOX 628
PIKETON, OHIO 45661-0628

Z-CAN
TIN CONTAINER
02-999-0303

NOTES:

- QA INSPECTION NOTE:

- Q OR AQ-NCS SYSTEM NOTE:

THE "Z" SUFFIX IN THIS DRAWING No. INDICATES THAT THIS DRAWING HAS EITHER A Q OR AQ-NCs SYSTEM THAT MAY NOT BE ALTERED OR CHANGED EITHER FUNCTIONALLY OR PHYSICALLY WITHOUT AUTHORIZATION FROM CONFIGURATION MANAGEMENT.

THE HIGHLIGHTED LINES INDICATE ENGINEERING DESIGN CONTROLS SPECIFIED IN NCSA'S AS NECESSARY TO MEET A DOUBLE CONTINGENCY REQUIREMENT.

Information Contained Within Does Not
Contain Export Controlled Information

Reviewer Daniel J. [Signature]
Date 6-17-05

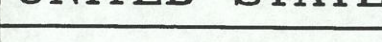
UNCLASSIFIED//NOT UCN
Ron Horsley
Review Date: FEB 03 2000

This document has been reviewed and is UNCLASSIFIED and NOT UCNI. This review does not constitute clearance for public release.

B. Carlson 6/16/05

Authorized Derivative Classifier _____ Date _____

AUTOCAD

REFERENCE DRAWINGS	OPEN CHANGES											P.M. RIDGEWAY DRAWN		03-19-90	UNITED STATES ENRICHMENT CORPORATION									
		△ 6	CORRECTIONS/CLARIFICATIONS PER ESO No. E1874R17	CJE	DLD	<i>Lalber</i>	11/23/92	M.A. SALTZMAN CHECKED	03-20-90	 USEC UNITED STATES ENRICHMENT CORPORATION P. O. BOX 628 PIKETON, OHIO 45661-0628														
		5	APPROVED FOR RELEASE PER ESO No. E1874R08	RS	DD	TOM JOHNSON	07-07-98	T.C. ADAMS ENG	03-19-90	TITLE 744G POLYETHYLENE BOTTLE 15-999-0304														
		4	APPROVED FOR RELEASE PER ESO No. E1874R07	RS	DD	JOHN HORTTEL	05-19-98	L.K. MEAD DISCIPLINE MANAGER	03-22-90															
		3	ISSUED TYPO CLARIFICATIONS PER ESO No. E1874R05	RS	DD	JOHN HORTTEL	04-26-98	APPROVALS	DATE															
		2	APPROVED FOR RELEASE PER W.R. No. D0000823	SD	ENK	DON WEBER	03-19-97	SCALE NONE	FACILITY X-744G											DWG NO DX-761-2340-M-7		REV 6		
			DESCRIPTION	DWN	ENG	DISC. MGR.	DATE																	
			INITIALS	APPROVAL																				

"CH" CONTAINER LID

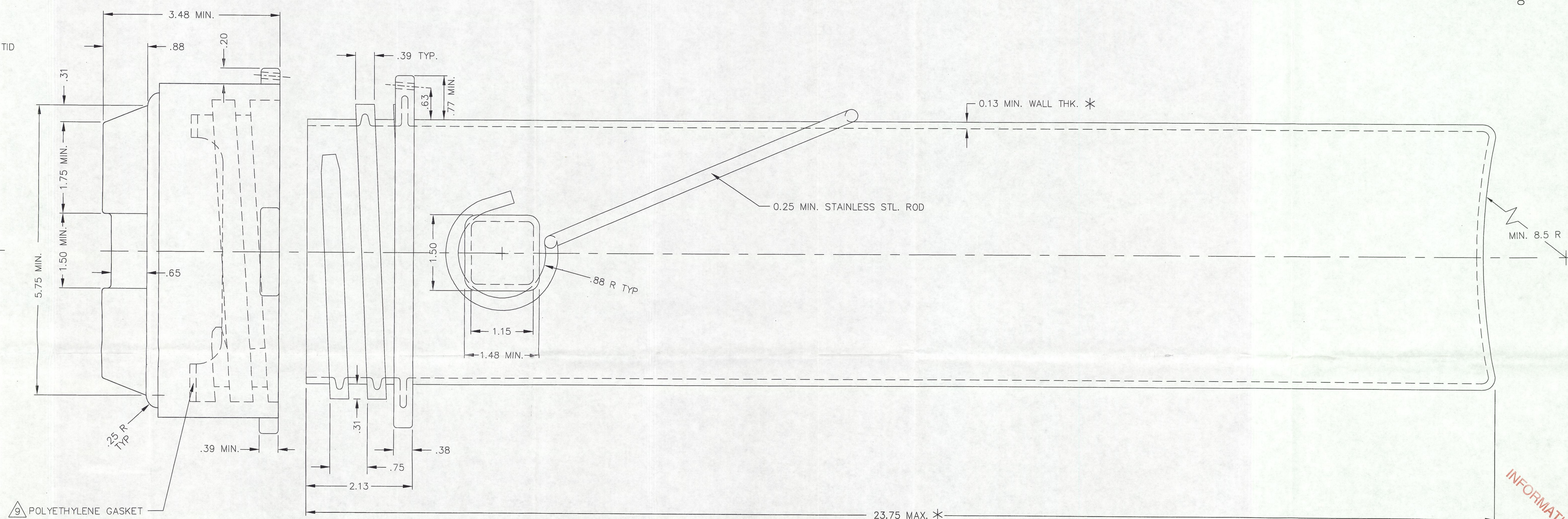
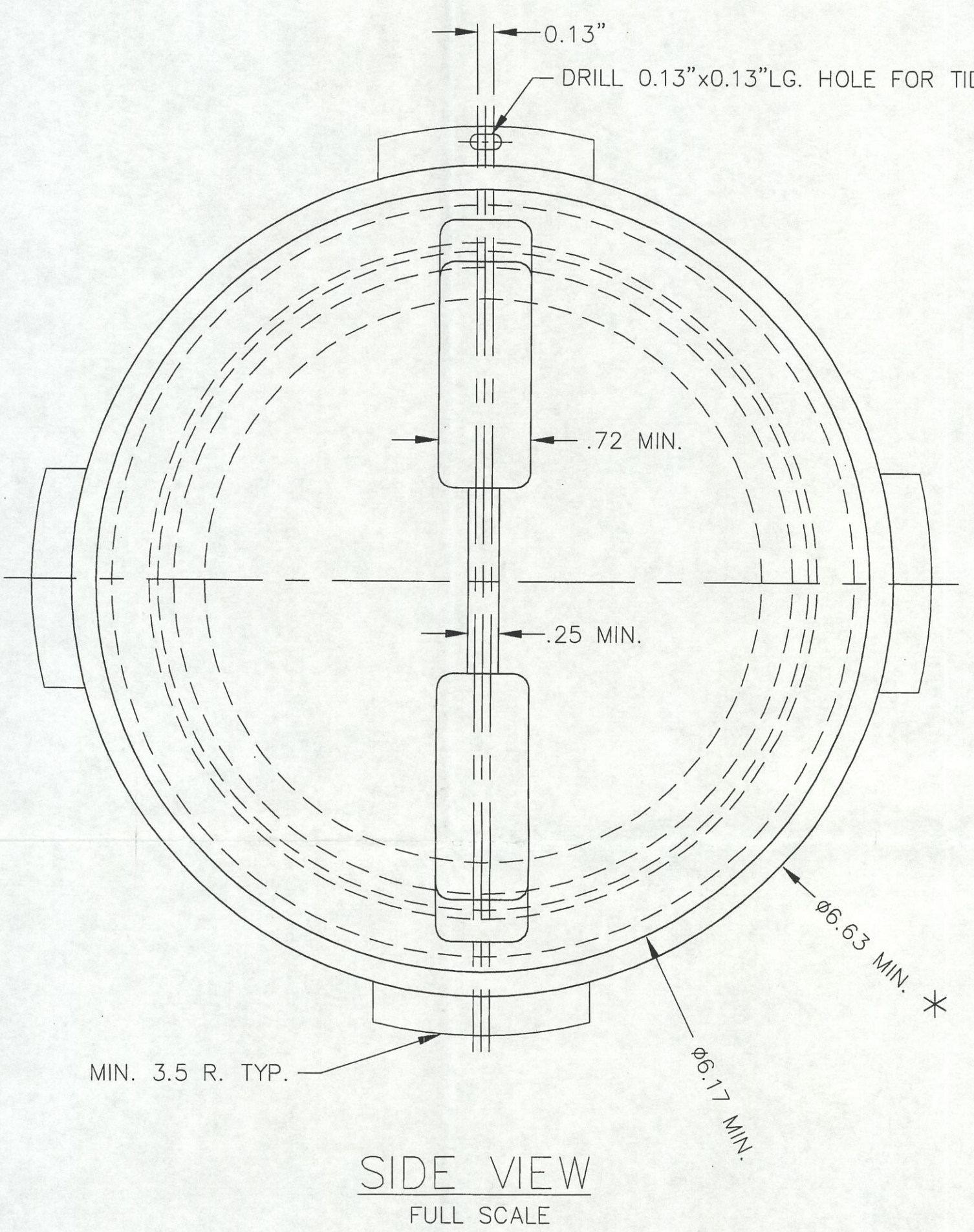
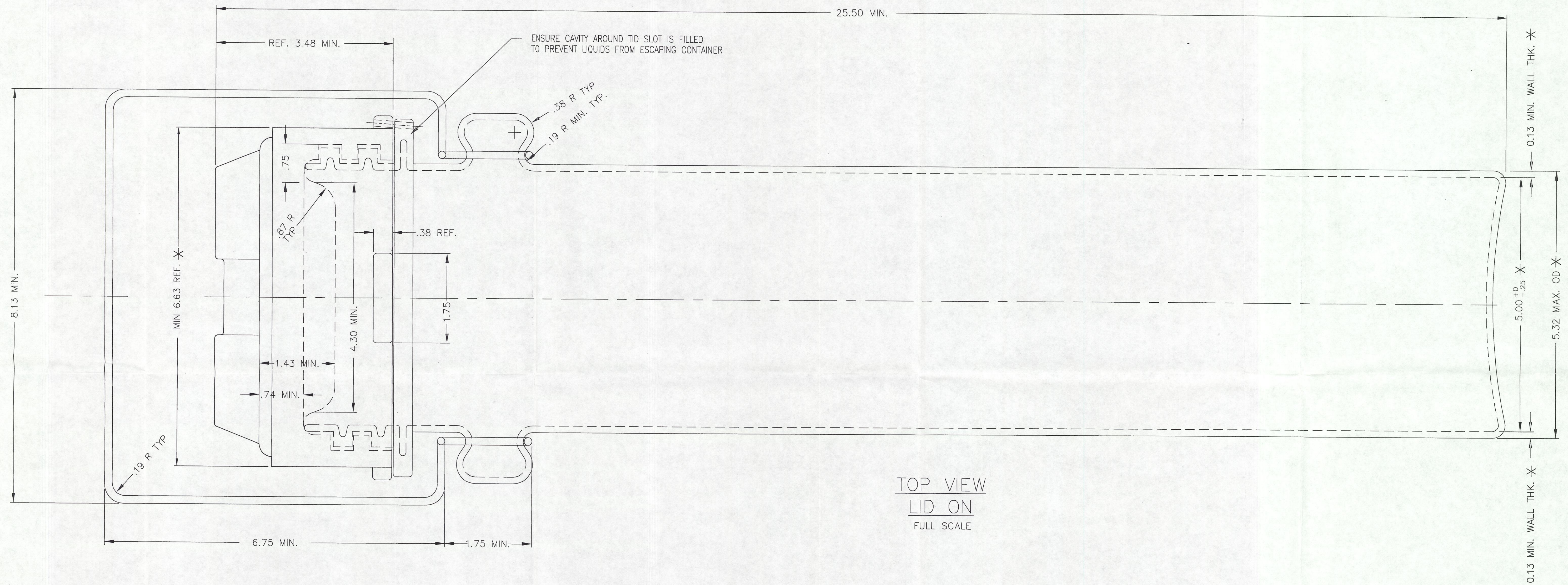
CONTAINER TO BE 90# ELECTROLYTIC
TIN PLATE WITH WELDED SIDE SEAM

APPROVED FOR RELEASE
Barry Carlson Date: 11/3/09
BC

This document has been reviewed and is
UNCLASSIFIED/NOT UCN. This review does
not constitute clearance for public release.
Barry Carlson 11/3/09
Authorized Derivative Classifier Date

"CH" CONTAINER							
0	12-31-98	AS BUILT					
NO.	DATE	DESCRIPTION	DWN BY	DRAFT CHK	LC	PROJ. ENGR.	
U.S. DEPARTMENT OF ENERGY DOE OAK RIDGE OPERATIONS ENVIRONMENTAL MANAGEMENT - MANAGEMENT & INTEGRATION BECHTEL JACOBS COMPANY LLC OAK RIDGE, TENNESSEE							
TITLE							
"CH" CONTAINER							
JOB NO.		DOE CONTRACT NO.		CAD FILENAME			
SS7		DE-AC05-98OR22700		CHCAN			
CLASS NO.		BLDG. NO.		PLANT NO.			
UNCLASSIFIED		X-345		PORTSMOUTH			
SCALE: 1/2" = 1"							
BECHTEL JACOBS		DWG NO			REV		
Bechtel Jacobs Company LLC		AX-761-2869-M			0		

INFORMATION ONLY



GENERAL NOTES

- THE CONTAINER SHALL BE CONSTRUCTED OF TRANSLUCENT YELLOW UV STABILIZED VIRGIN POLYETHYLENE WITH A MINIMUM WALL THICKNESS OF 0.13" AND A MINIMUM WEIGHT OF 2-3/4 POUNDS, EXCLUDING HANDLE WEIGHT. THE RATED CAPACITY OF THE CONTAINER SHALL BE APPROXIMATELY 436 CUBIC INCHES.
- THE STAINLESS STEEL HANDLE SHALL CONSIST OF MOLDED INTEGRAL HANDLE RETAINERS MADE FROM STAINLESS STEEL TYPE 18-8.
- THE RESIN SHALL BE OF VIRGIN LINEAR LOW DENSITY POLYETHYLENE RESIN WITH PHYSICAL PROPERTIES IN ACCORDANCE WITH THE FOLLOWING:
DENSITY PER ASTM D-1505
MELT INDEX PER ASTM D-1238
ESCR PER ASTM D-1693B
TENSILE VALUES MODULUS (1% SECANT)(BREAK, YIELD AND ELONGATION PER ASTM D-638
FLEXURAL MODULUS (TANGENT) PER ASTM D-790
BRITTLNESS TEMPERATURE PER ASTM D-746

LIMITS UNLESS OTHERWISE SPECIFIED
.0 = ± 0
.00 = ± .03
.000 = ± .005
FRACTIONAL = ± 0/0
ANGLES = DEC.DEG. - ± 0.0
DEGREES = ± 0

GENERAL NOTES
1. DO NOT SCALE DRAWINGS
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES
3. ALL CORNERS SHALL BE ROUNDED UNLESS OTHERWISE SPECIFIED

REFERENCE DRAWINGS

OPEN CHANGES

REV	DESCRIPTION	DWN	ENG	DISC. MGR.	DATE
14	APPROVED FOR RELEASE PER ECR E1874R19-1	DRT	DG	Don Weber / ADCM	11-5-03
13	APPROVED FOR RELEASE PER ECR E1874R19-1	DRT	DG	D.W. WEBER	07-25-03
REVISION OR ISSUE PURPOSE		INITIALS		APPROVAL	

D.A. DIFRANGO DRAWN	07-01-93
C.J. BACKLUND CHECKED	07-01-93
C.J. BACKLUND ENG	06-30-93
L. RHOADS DISCIPLINE MANAGER	07-15-93
APPROVALS	
SCALE AS SHOWN	FACILITY X-SITE

UNITED STATES ENRICHMENT CORPORATION	
USEC UNITED STATES ENRICHMENT CORPORATION P. O. BOX 628 PIKETON, OHIO 45661-0628	
TITLE GP CONTAINER, 5"x25.5" POLYETHYLENE STORAGE CONTAINER 15-999-0306	
DWG NO DX-761-2586-M-Z	REV 14

Q OR AQ-NCS SYSTEM NOTE:

THE "Z" SUFFIX IN THIS DRAWING No. INDICATES THAT THIS DRAWING HAS EITHER A Q OR AQ-NCS SYSTEM THAT MAY NOT BE ALTERED OR CHANGED EITHER FUNCTIONALLY OR PHYSICALLY WITHOUT AUTHORIZATION FROM CONFIGURATION MANAGEMENT.

* SEE IS-0248-Z FOR QC INSPECTION ALLOWABLE VALUES (NOTE APPLIES ONLY TO PURCHASER)

UNCLASSIFIED/Not UCN!
Date: 11-5-03

Information Contained within
DOES NOT CONTAIN
Export Controlled Information
Reviewer (Signature) [Signature]
Date: 8-18-07

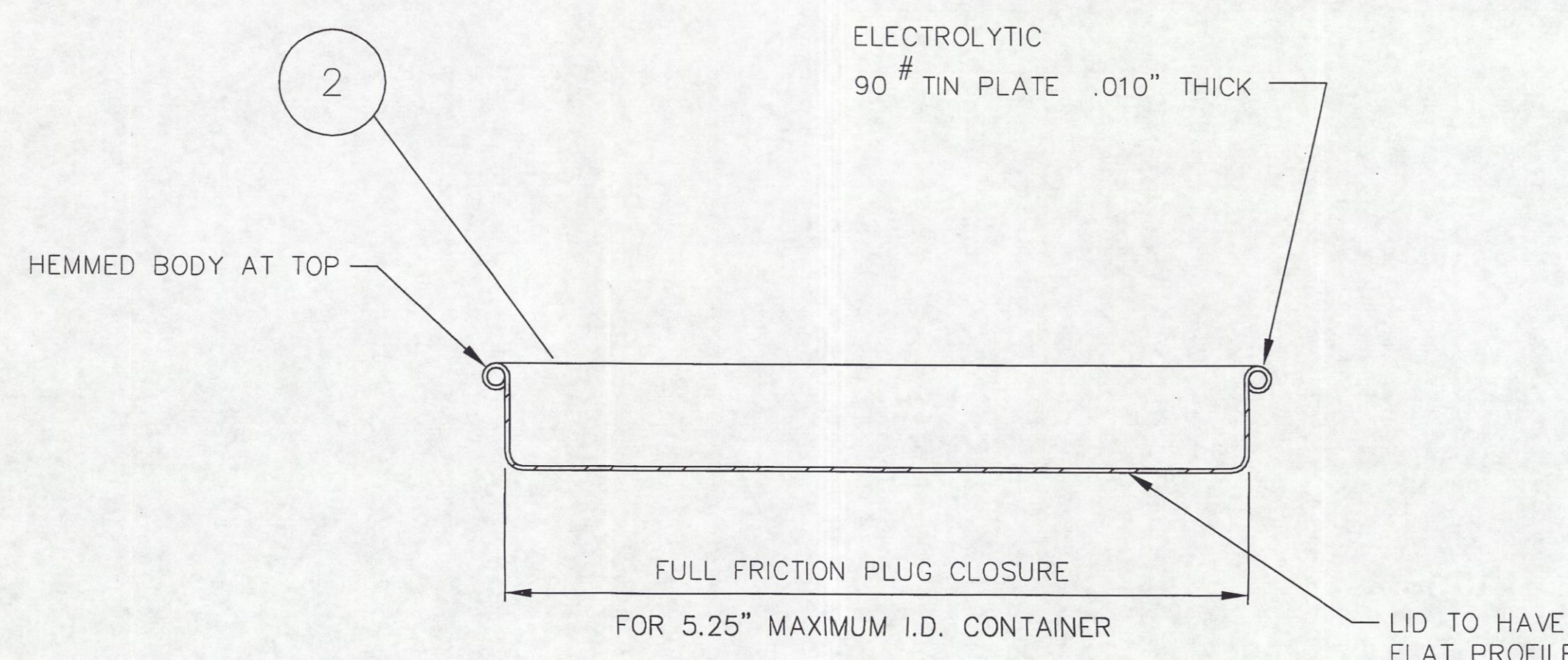
INFORMATION ONLY

AUTOCAD

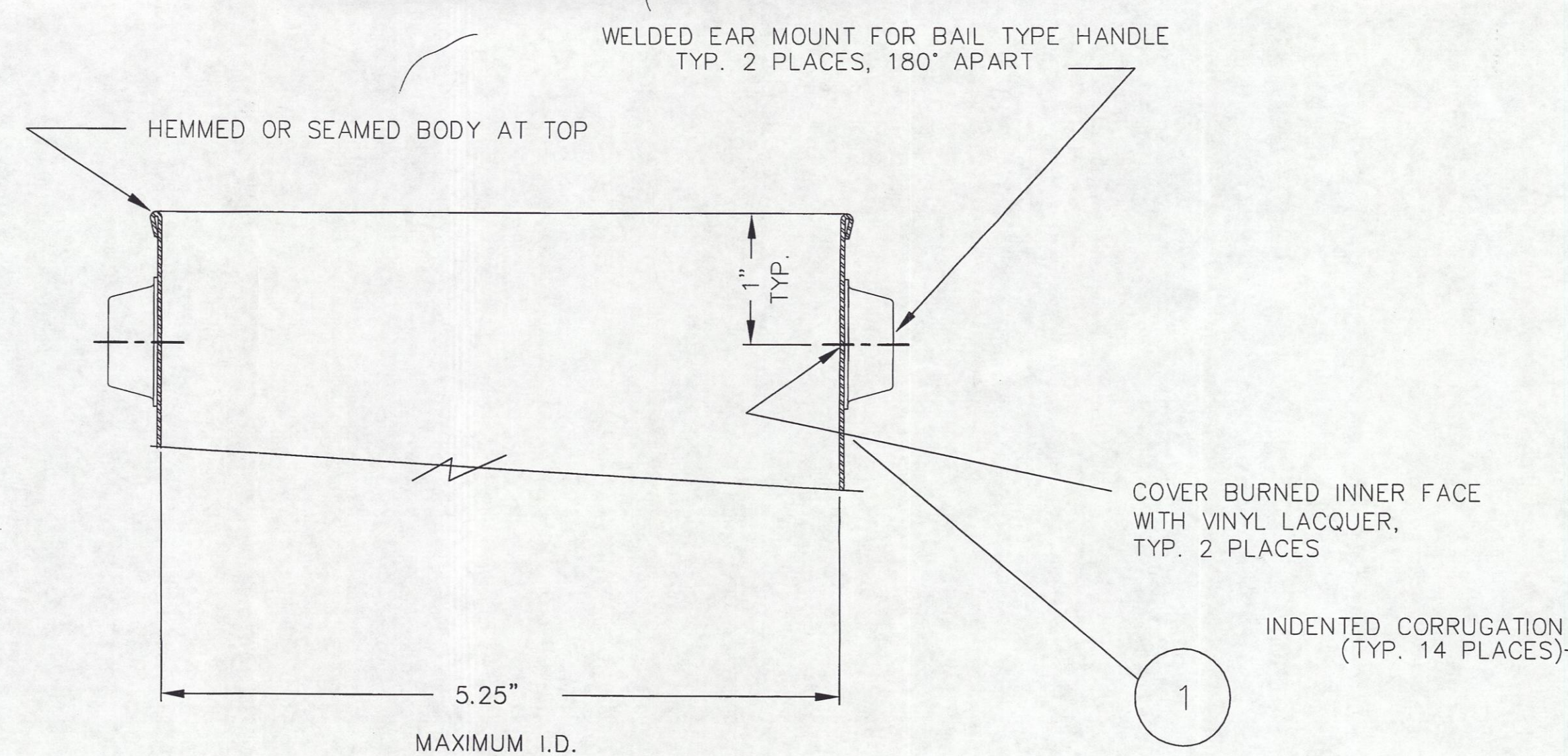
BILL OF MATERIALS

ITEM No.	DESCRIPTION	MATERIAL
1	135 # TIN PLATE CAN, 5" DIA X 24" HIGH WITH BAIL TYPE HANDLE	ELECTROLYTIC, 135# TIN PLATE
2	90 # TIN PLATE FULL FRICTION PLUG CLOSURE LID	ELECTROLYTIC, 90# TIN PLATE

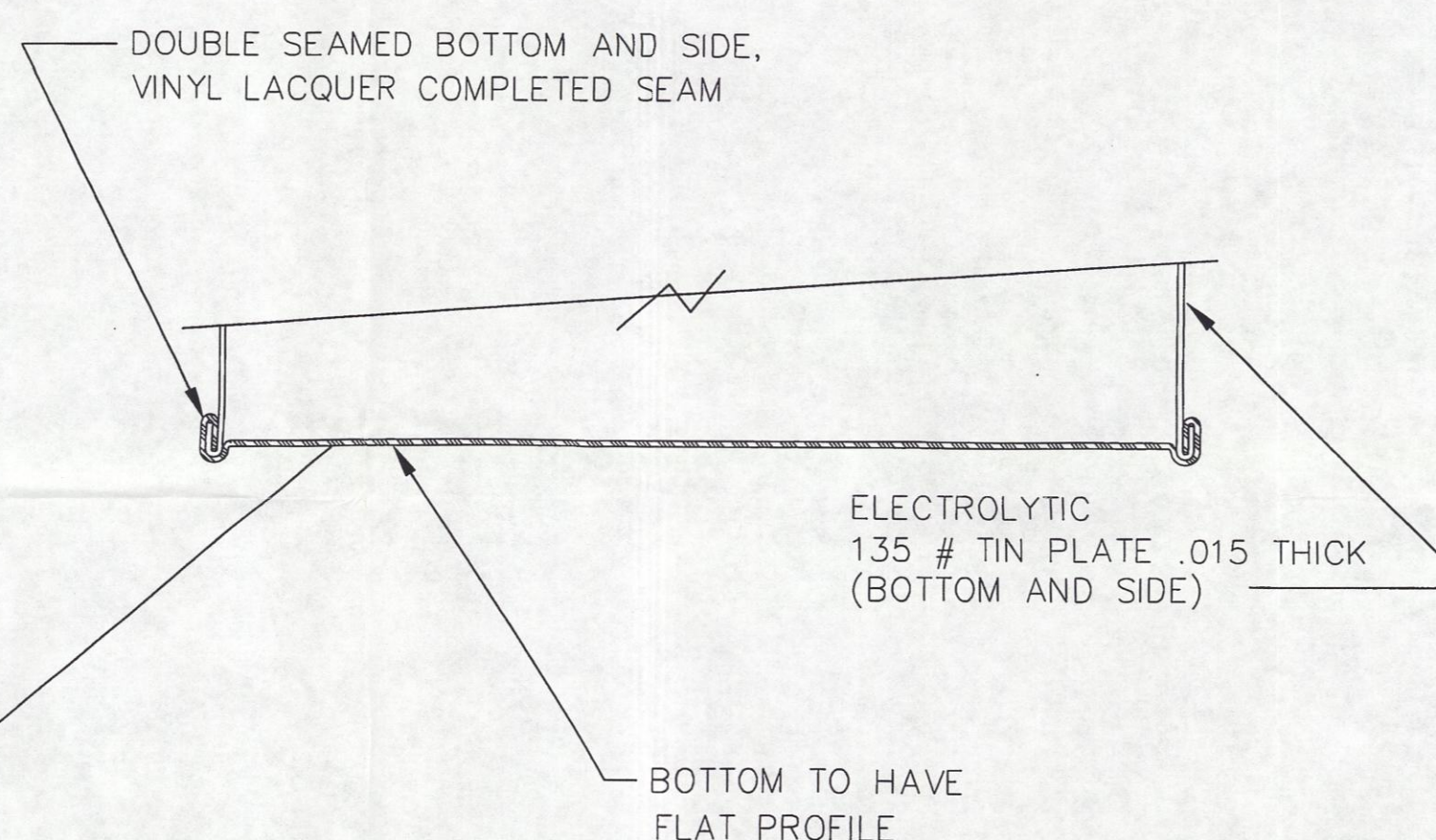
STANDARD BAIL HANDLE (SHAPE OPTIONAL)
HANDLE SHALL CLEAR LID AND REST
AGAINST SIDE OF CAN WHEN IN LOWER
POSITION



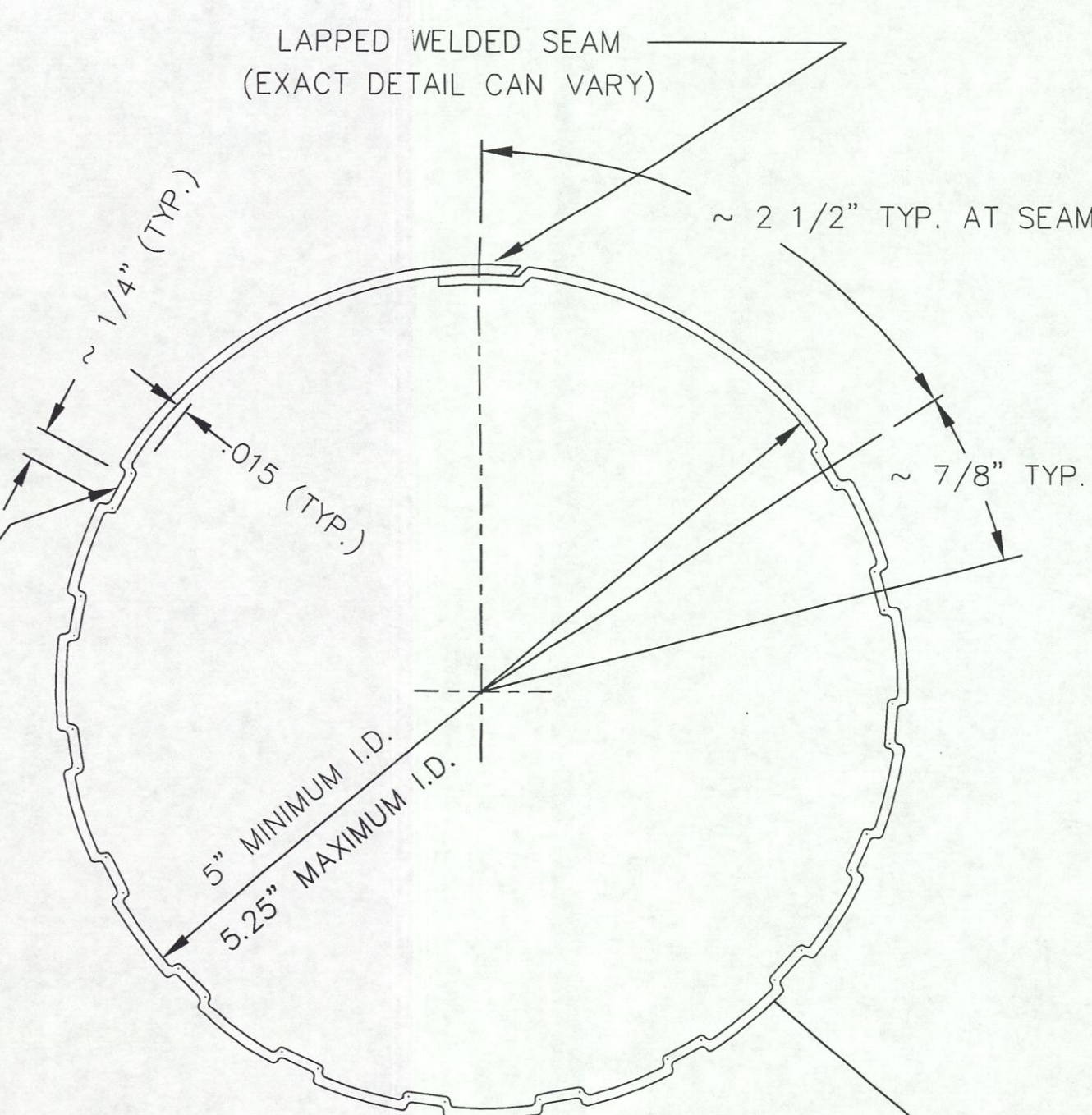
SECTION DETAIL OF LID



SECTION THRU TOP OF CAN



SECTION THRU BOTTOM OF CAN



SECTION

"A-A"
DX-761-M-981-Z

ELECTROLYTIC
135# TIN PLATE
.015" MIN. THICK

INDENTED CORRUGATIONS
~ 18" LONG
N.T.S.

24.0" MAXIMUM TOTAL HEIGHT WITHOUT LID IN PLACE
23 3/4" MINIMUM TOTAL HEIGHT WITH LID IN PLACE

"A-A"
DX-761-M-981-Z

TIN CONTAINER

DRAWING ON
WHICH SECTION
OR DETAIL IS
TAKEN

SECTION & DETAIL KEY

NUMBER OF
SECTION OR
DETAIL

DRAWING ON
WHICH SECTION
OR DETAIL IS
SHOWN

REFERENCE DRAWINGS

OPEN CHANGES

REV	DESCRIPTION	DWN	ENG	DISC. MGR.	DATE
6	CORRECTIONS/CLARIFICATIONS PER ESO No. E1874R17	CJE	DLD	Ron Weber	2/24/00
5	CORRECTIONS/CLARIFICATIONS PER ESO No. E1874R17	CJE	DLD	DON WEBER	11-29-99
4	CHANGED STORES No. FOR W.R. D0000823	SDD	EK	DON WEBER	02-17-97
3	REDRN - AFR PER W.R. No. D0000823	CH	EK	DON WEBER	01-20-97
REV	DESCRIPTION	DWN	ENG	DISC. MGR.	DATE
	REVISION OR ISSUE PURPOSE	INITIALS		APPROVAL	

AQ-NCS NOTE:

THE "Z" SUFFIX IN THIS DRAWING No. INDICATES THAT THIS
DRAWING HAS A SAFETY FEATURE THAT MAY NOT BE
ALTERED OR CHANGED EITHER FUNCTIONALLY OR PHYSICALLY
WITHOUT AUTHORIZATION FROM CONFIGURATION MANAGEMENT.

THE HIGHLIGHTED LINES INDICATE ENGINEERING DESIGN CONTROLS
SPECIFIED IN NCSA'S AS NECESSARY TO MEET A DOUBLE
CONTINGENCY REQUIREMENT. REFER TO NCSA-PLANT_025, & PLANT_006.

UNCLASSIFIED/NOT UCN
Ron Horsley
Review Date: 2/29/00

This document has been reviewed and is
UNCLASSIFIED and NOT UCN. This review
does not constitute clearance for public release.
R. Thompson
Date: 6/14/05

AUTOCAD

UNITED STATES ENRICHMENT CORPORATION

USEC UNITED STATES ENRICHMENT CORPORATION
P. O. BOX 628
PIKETON, OHIO 45661-0628

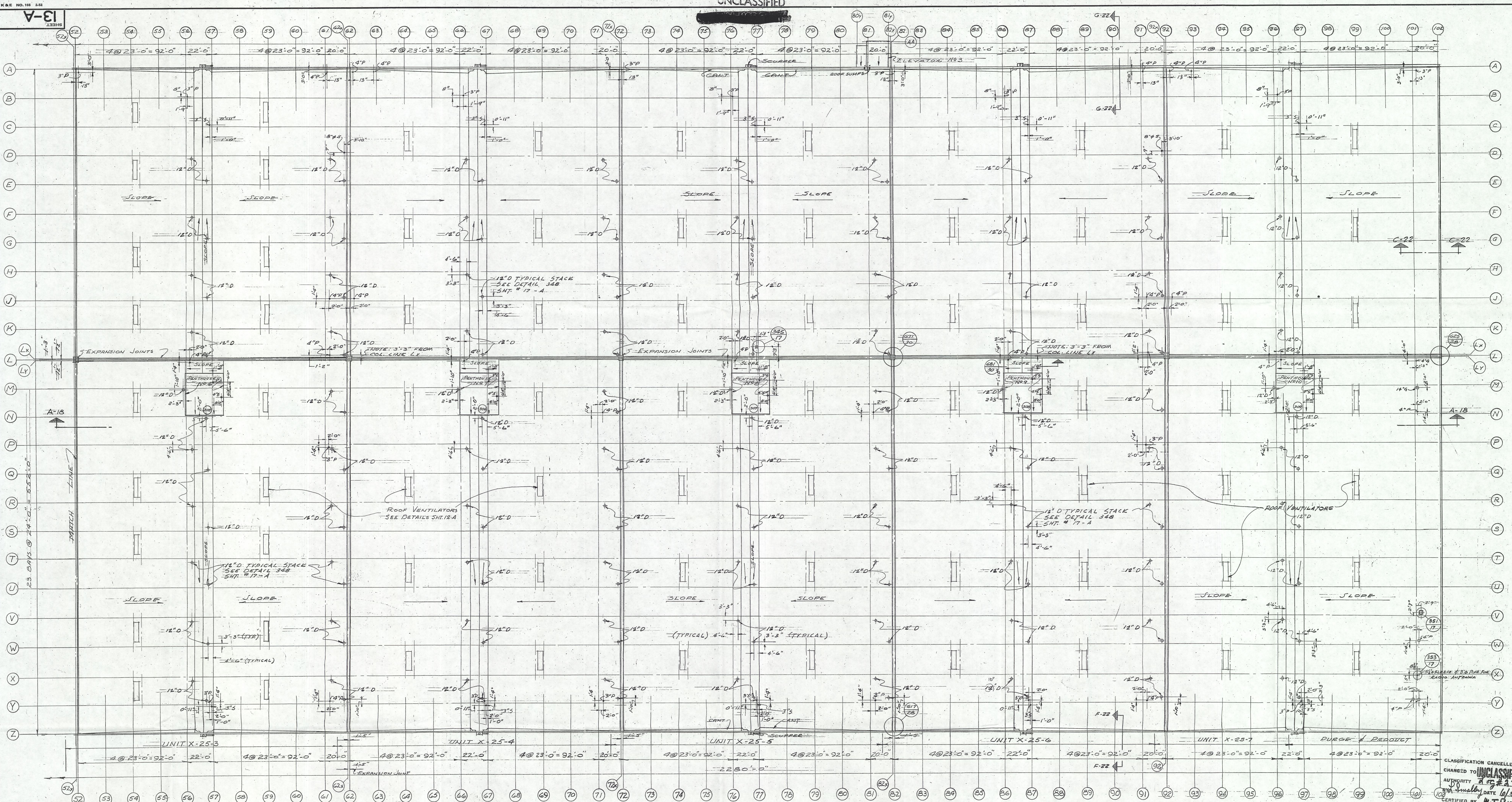
TITLE
STORAGE CONTAINER
"F-CAN"
02-999-0302

DWG NO
DX-761-M-981-Z

REV
6

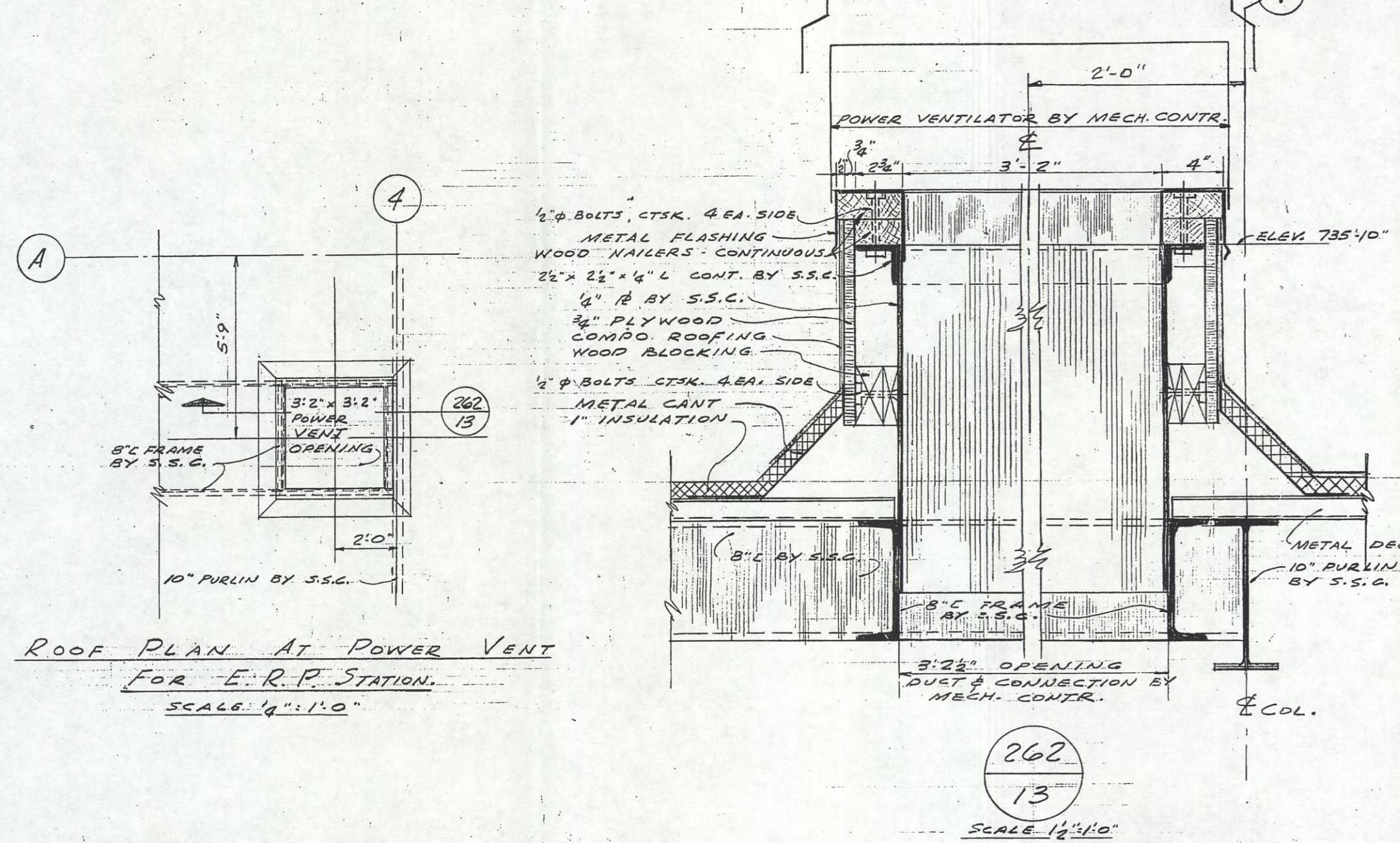
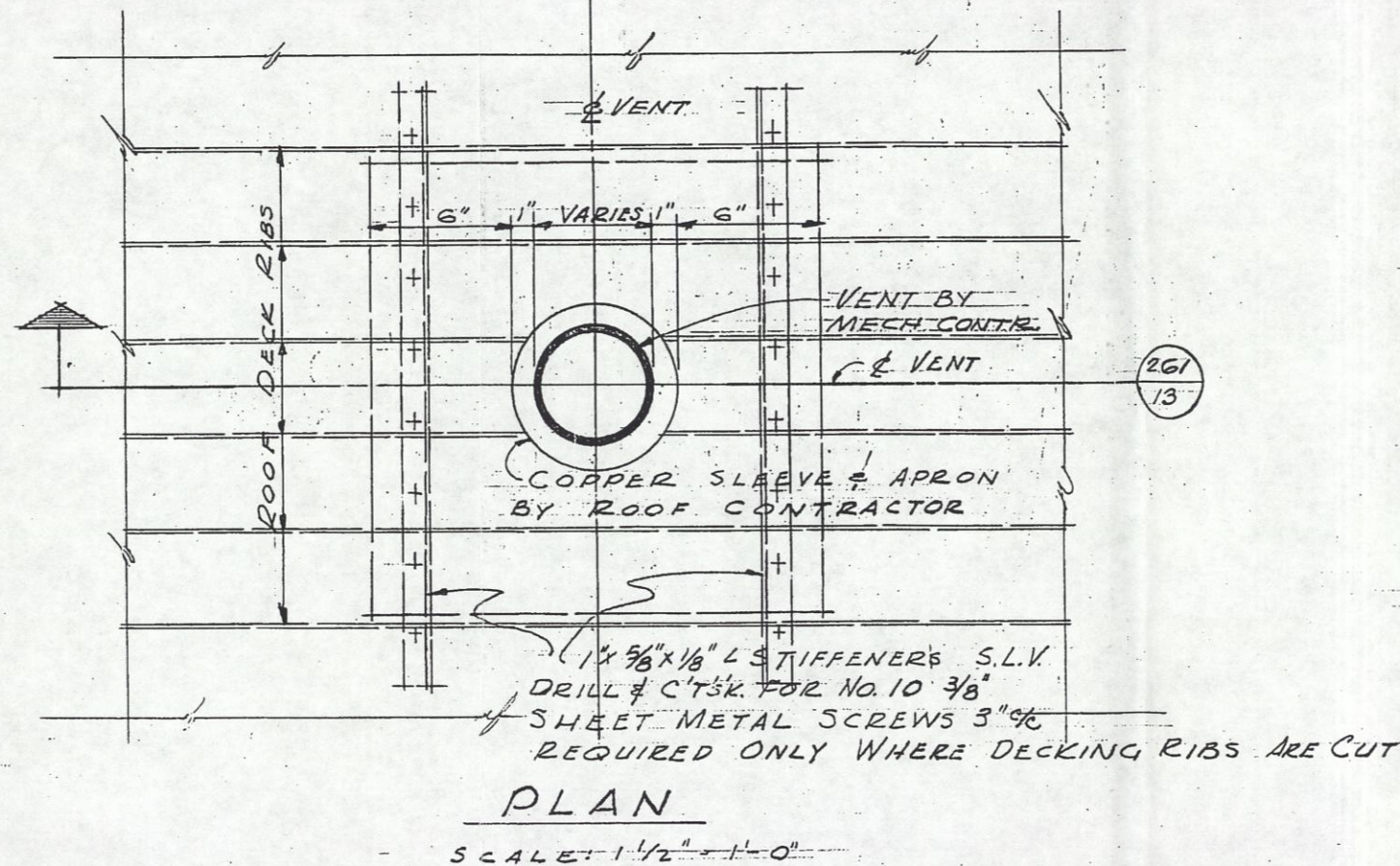
UNCLASSIFIED

UNCLASSIFIED

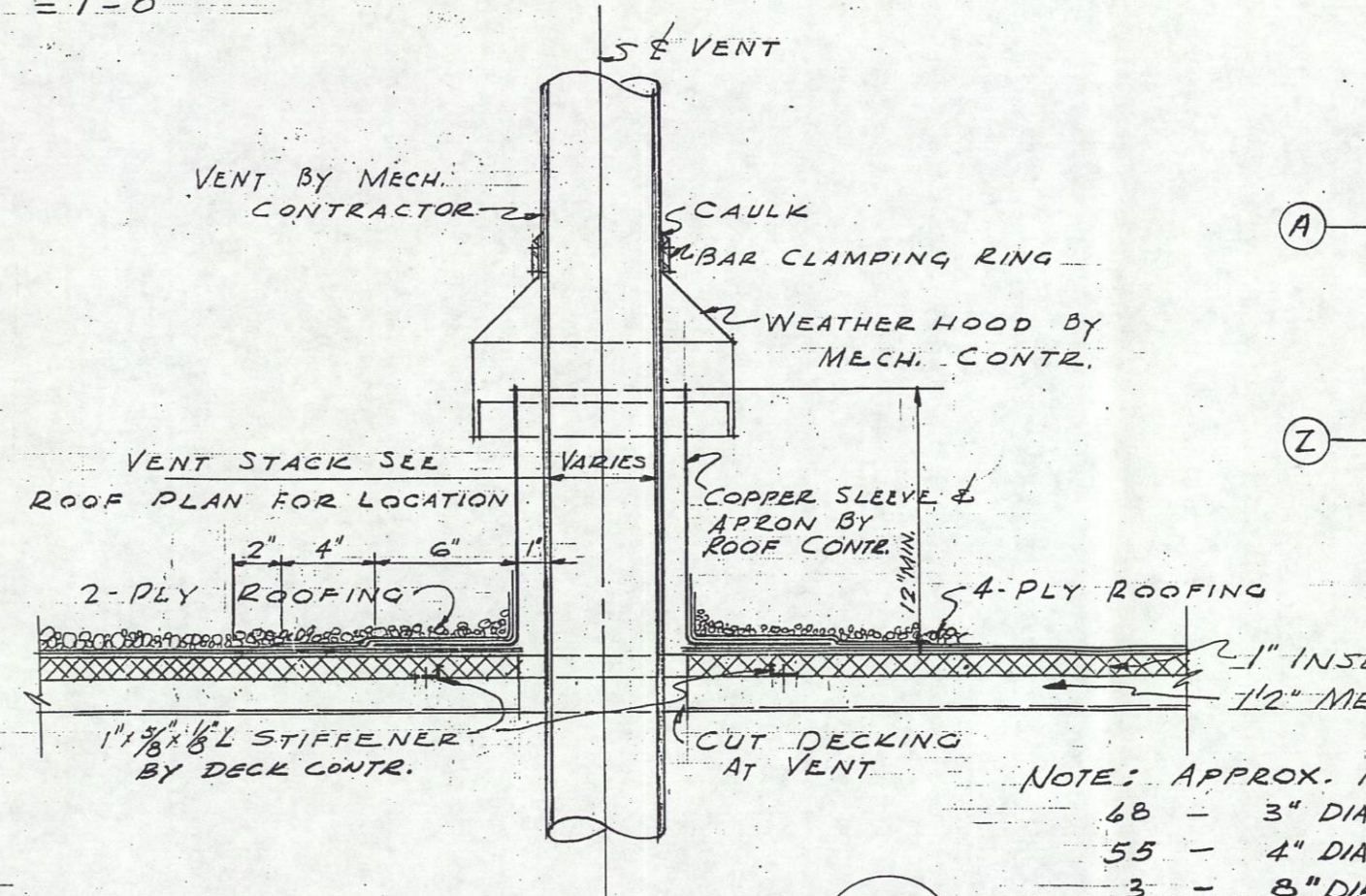


ROOF PLAN - UNIT #X-25-3 THRU #X-25-7

SCALE 3/32" = 1'-0"

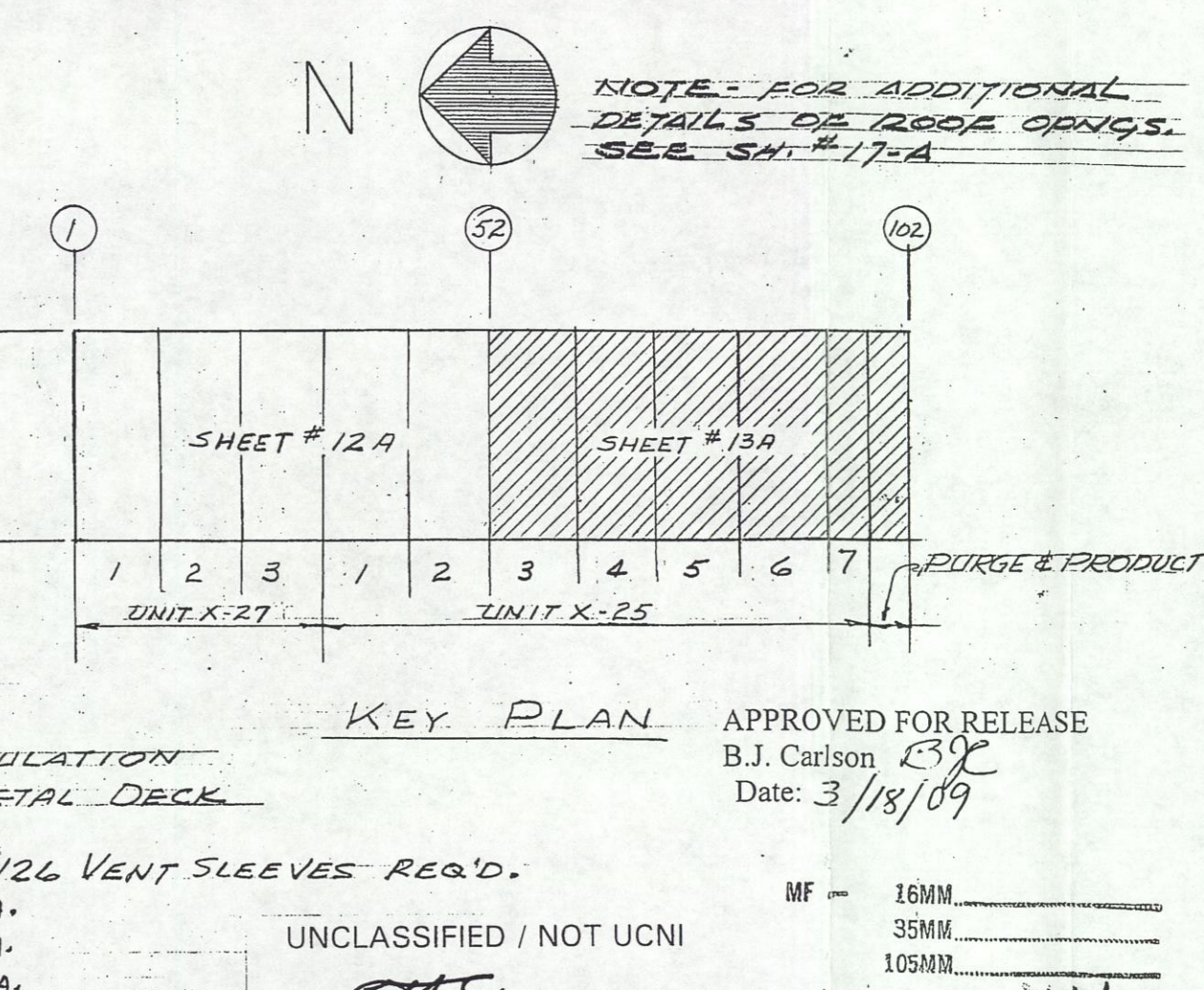
ROOF PLAN AT POWER VENT
FOR E.R.P. STATION
SCALE 9/16" = 1'-0"

TYPICAL ROOF SLEEVE DETAILS



SECTION 261

SCALE 1/16" = 1'-0"



KEY PLAN

APPROVED FOR RELEASE
B.J. Carlson
Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

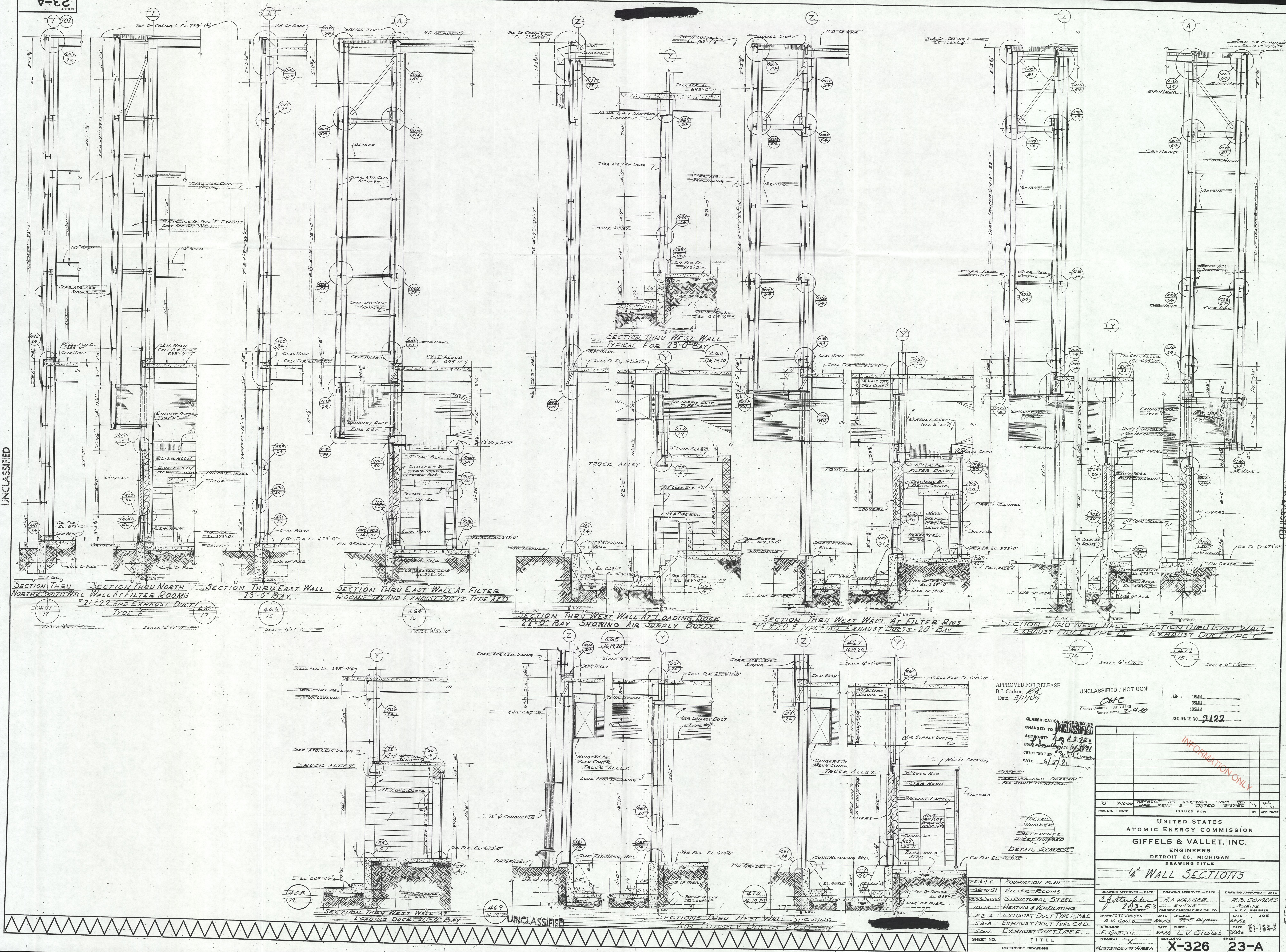
Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

Date: 3/18/09

INFORMATION ONLY	
REV. NO.	DATE
0	7-10-54
1	7-10-54
2	7-10-54
3	7-10-54
4	7-10-54
5	7-10-54
6	7-10-54
7	7-10-54
8	7-10-54
9	7-10-54
10	7-10-54
11	7-10-54
12	7-10-54
13	7-10-54
14	7-10-54
15	7-10-54
16	7-10-54
17	7-10-54
18	7-10-54
19	7-10-54
20	7-10-54
21	7-10-54
22	7-10-54
23	7-10-54
24	7-10-54
25	7-10-54
26	7-10-54
27	7-10-54
28	7-10-54
29	7-10-54
30	7-10-54
31	7-10-54
32	7-10-54
33	7-10-54
34	7-10-54
35	7-10-54
36	7-10-54
37	7-10-54
38	7-10-54
39	7-10-54
40	7-10-54
41	7-10-54
42	7-10-54
43	7-10-54
44	7-10-54
45	7-10-54
46	7-10-54
47	7-10-54
48	7-10-54
49	7-10-54
50	7-10-54
51	7-10-54
52	7-10-54
53	7-10-54
54	7-10-54
55	7-10-54
56	7-10-54
57	7-10-54
58	7-10-54
59	7-10-54
60	7-10-54
61	7-10-54
62	7-10-54
63	7-10-54
64	7-10-54
65	7-10-54
66	7-10-54
67	7-10-54
68	7-10-54
69	7-10-54
70	7-10-54
71	7-10-54
72	7-10-54
73	7-10-54
74	7-10-54
75	7-10-54
76	7-10-54
77	7-10-54
78	7-10-54
79	7-10-54
80	7-10-54
81	7-10-54
82	7-10-54
83	7-10-54
84	7-10-54
85	7-10-54
86	7-10-54
87	7-10-54
88	7-10-54
89	7-10-54
90	7-10-54
91	7-10-54
92	7-10-54
93	7-10-54
94	7-10-54
95	7-10-54
96	7-10-54
97	7-10-54
98	7-10-54
99	7-10-54
100	7-10-54
101	7-10-54
102	7-10-54
103	7-10-54
104	7-10-54
105	7-10-54
106	7-10-54
107	7-10-54
108	7-10-54
109	7-10-54
110	7-10-54
111	7-10-54
112	7-10-54
113	7-10-54
114	7-10-54
115	7-10-54
116	7-10-54
117	7-10-54
118	7-10-54
119	7-10-54
120	7-10-54
121	7-10-54
122	7-10-54
123	7-10-54
124	7-10-54
125	7-10-54
126	7-10-54
127	7-10-54
128	7-10-54
129	7-10-54
130	7-10-54
131	7-10-54
132	7-10-54
133	7-10-54
134	7-10-54
135	7-10-54
136	7-10-54
137	7-10-54
138	7-10-54
139	7-10-54
140	7-10-54
141	7-10-54
142	7-10-54
143	7-10-54
144	7-10-54
145	7-10-54
146	7-10-54
147	7-10-54
148	7-10-54
149	7-10-54
150	7-10-54
151	7-10-54
152	7-10-54
153	7-10-54
154	7-10-54
155	7-10-54
156	7-10-54
157	7-10-54
158	7-10-54
159	7-10-54
160	7-10-54
161	7-10-54
162	7-10-54
163	7-10-54
164	7-10-54
165	7-10-54
166	7-10-54
167	7-10-54
168	7-10-54
169	7-10-54
170	7-10-54
171	7-10-54
172	7-10-54
173	7-10-54
174	7-10-54
175	7-10-54
176	7-10-54
177	7-10-54
178	7-10-54
179	7-10-54
180	7-10-54
181	7-10-54
182	7-10-54
183	7-10-54
184	7-10-54
185	7-10-54
186	7-10-54
187	7-10-54
188	7-10-54
189	7-10-54
190	7-10-54
191	7-10-54
192	7-10-54
193	7-10-54
194	7-10-54
195	7-10-54
196	7-10-54
197	7-10-54
198	7-10-54
199	7-10-54
200	7-10-54
201	7-10-54
202	7-10-54
203	7-10-54
204	7-10-54
205	7-10-54
206	7-10-54
207	7-10-54
208	7-10-54
209	7-10-54
210	7-10-54
211	7-10-54
212	7-10-54
213	7-10-54
214	7-10-54
215	7-10-54
216	7-10-54
217	7-10-54
218	7-10-54
219	7-10-54
220	7-10-54
221	7-10-54
222	7-10-54
223	7-10-54
224	7-10-54
225	7-10-54
226	7-10-54
227	7-10-54
228	7-10-54
229	7-10-54
230	7-10-54
231	7-10-54
232	7-10-54
233	7-10-54
234	7-10-54
235	7-10-54
236	7-10-54
237	7-10-54
238	7-10-54
239	7-10-54
240	7-10-54
241	7-10-54
242	7-10-54
243	7-10-54
244	7-10-54
245	7-10-54
246	7-10-54
247	7-10-54
248	7-10-54
249	7-10-54
250	7-10-54
251	7-10-54
252	7-10-54
253	7-10-54
254	7-10-54
255	7-10-54
256	7-10-54
257	7-10-54
258	7-10-54
259	7-10-54
260	7-10-54
261	7-10-54
262	7-10-54
263	7-10-54
264	7-10-54
265	7-10-54
266	7-10-54
267	7-10-54
268	7-10-54
269	7-10-54
270	7-10-54
271	7-10-54
272	7-10-54
273	7-10-54
274	7-10-54
275	7-10-54
276	7-10-54
277	7-10-54
278	7-10-54
279	7-10-54
280	7-10-54
281	7-10-54
282	7-10-54
283	7-10-54
284	7-10-54
285	7-10-54
286	7-10-54
287	7-10-54
288	7-10-54
289	7-10-54
290	7-10-54
291	7-10-54
292	7-10-54
293	7-10-54
294	7-10-54
295	7-10-54
296	7-10-54
297	7-10-54
298	7-10-54
299	7-10-54
300	7-10-54
301	7-10-54
302	7-10-54
303	7-10-54
304	7-10-54
305	7-10-54
306	7-10-54
307	7-10-54
308	7-10-54
309	7-10-54
310	7-10-54
311	7-10-54
312	7-10-54
313	7-10-54
314	7-10-54
315	7-10-54
316	7-10-54
317	7-10-54
318	7-10-54
319	7-10-54
320	7-10-54
321	7-10-54
322	7-10-54
323	7-10-54
324	7-10-54
325	7-10-54
326	7-10-54
327	7-10-54
328	7-10-54
329	7-10-54
330	7-10-54
331	7-10-54
332	7-10-54
333	7-10-54
334	7-10-54
335	7-10-54
336	7-10-54
337	7-10-54
338	7-10-54
339	7-10-54
340	7-10-54
341	7-10-54
342	7-10-54
343	7-10-54
344	7-10-54
345	7-10-54
346	7-10-54
347	7-10-54
348	7-10-54
349	7-10-54
350	7-10-54
351	7-10-54
352	7-10-54
353	7-10-54
354	7-10-54
355	7-10-54
356	7-10-54
357	7-10-54
358	7-10-54
359	7-10-54
360	7-10-54
361	7-10-54
362	7-10-54
363	7-10-54
364	7-10-54
365	7-10-54
366	7-10-54
367	7-10-54
368	7-10-54
369	7-10-54
370	7-10-54
371	7-10-54
372	7-10-54
373	7-10-54
374	7-10-54
375	7-10-54
376	7-10-54
377	7-10-54
378	7-10-54
379	7-10-54
380	7-10-54
381	7-10-54
382	7-10-54
383	7-10-54
384	7-10-54
385	7-10-54
386	7-10-54
387	7-10-54
388	7-10-54
389	7-10-54
390	7-10-54
391	7-10-54
392	7-10-54
393	7-10-54
394	7-10-54
395	7-10-54
396	7-10-54
397	7-10-54
398	7-10-54
399	7-10-54
400	7-10-54
401	7-10-54
402	7-10-54
403	7-10-54
404	7-10-54
405	7-10-54
406	7-10-54
407	7-10-54
408	7-10-54
409	7-10-54
410	7-10-54
411	7-10-54
412	7-10-54
413	7-10-54
414	7-10-54
415	7-10-54
416	7-10-54
417	7-10-54
418	7-10-54
419	7-10-54
420	7-10-54
421	7-10-54
422	7-10-54
423	7-10-54
424	7-10-54
425	7-10-54
426	7-10-54
427	7-10-54
428	7-10-54
429	7-10-54
430	7-10-54
431	7-10-54
432	7-10-54
433	7-10-54
434	7-10-54
435	7-10-54
436	7-10-54
437	7-10-54
438	7-10-54
439	7-10-54
440	7-10-54
441	7-10-54
442	7-10-54
443	7-10-54
444	7-10-54
445	7-10-54
446	7-10-54
447	7-10-54
448	7-10-54
449	7-10-54
450	7-10-54
451	7-10-54
452	7-10-54
453	7-10-54
454	7-10-54
455	7-10-54
456	7-10-54
457	7-10-54
458	7-10-54
459	7-10-54
460	7-10-54
461	

[illegible]